

Military Review

March 1978





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MR READER FORUM

An Unpleasant Prospect

Major Joseph F. Trimble's review of George F. Kennan's book, *The Cloud of Danger*, in the November 1977 issue of the *Military Review* has prompted this letter. His comments are far too moderate and generous, and I am astounded by the concluding remark which apparently embraced Kennan's views without offering any supporting evidence. The "realities" first need to be defined but, since they are not, the final observations must be termed gratuitous.

Are you familiar with the organization known as the Council on Foreign Relations (CFR) and its objectives? Kennan has been a member for years, and, in keeping with the precepts of the CFR, he has been in the forefront of the continuing efforts to emasculate the means and the will of the United States to resist the USSR—Kennan's 30-year-old "warning" notwithstanding. The steady deterioration of US strength vis-à-vis the Russians has not been accidental or due to so-called "economy" measures. This has happened under both Republican and Democratic administrations, and the reason why this is so is simple—key members of the CFR have occupied prominent positions throughout. If you doubt this, please check the records.

The Russians have not changed their ways and never will as long as the existing power structure maintains its control and the United States

continues to provide Russia with strategic and economic aid of substantial proportions of all sorts. At this point, I would like to mention for reference Antony Sutton's two volumes of 1968 and 1971, *Western Technology and Soviet Economic Development* (Hoover Institution), and *National Suicide* (Arlington House, 1973).

They will, indeed, try to bury us. With the help of the likes of George Kennan, this process will most likely be accelerated.

This may not be a pleasant prospect, but it is reality.

George G Eddy,
Management Consultant

The All-Volunteer Armed Forces

Professor William R. King's article, "The All-Volunteer Armed Forces: Status, Prospects and Alternatives" (*Military Review*, September 1977), is a scholarly and thought-provoking evaluation. However, the article's generalities and inaccuracies regarding the military detract from the meaning and thrust.

(continued on page 111)

(continued from page 2)

In redefining "defense manpower costs," King includes the cost of family housing *supplied* to military personnel. Since the payroll includes a housing allowance which is forfeited when occupying government-*supplied* housing, the government is more than adequately reimbursed, over a period of time. Additional housing is an investment for future savings.

Further, in redefining "defense manpower costs," retired pay is charged as a current cost of manpower. Since the government does not prefund retirement, yesterday's retirement costs are charged to today's budget, only in the military budget. Civilian government employee's retirement costs are funded from the general fund. The government is inconsistent in budget handling of retirement costs. Military retirement costs should not be considered as part of today's manpower cost. Changes in today's policies and management will not affect the fixed costs of yesterday's retirement.

King also generalizes that military pay has increased much more rapidly than civilian pay over the past decade. He expands his point by citing the increase in entry-level pay. His analysis is misleading and self-serving. Overall military pay has not increased by 193 percent. Further, no recognition is provided of the low level of entrance-level pay in 1964. Percentage comparisons are only valid when base figures are defined. To compound the issue, no recognition is provided for the economic impact of reduced benefits.

King leaves hanging whether

women's and black's representation in the military should be established at 50 percent and 11 percent, respectively. He implies there are not enough women and too many blacks.

He leaves the impression there should be absolute boundaries. On the strength of female representation, he avoids the impact on reliability of a peacetime military with a large number of females. He ignores the capacity of expanding a force made up of a large number of women.

The "civilianization" law should be highlighted under a better managed all-volunteer force. The policies and practices of several former presidents, and the incumbent, are not addressed. Reduction of the government civilian workforce has been championed by all. But the military is the most easily controlled and, therefore, generally the segment which takes the stiffest cuts in civilians. Under current and past policies, "civilianization" is doomed to failure.

Perhaps the most disturbing proposed management improvement is "enlisted attrition reduction programs." This implies good potential soldiers are being lost through current programs. The military losses are representative of the quality of a cross section of today's youth. To require retention of proven marginal or ineffective individuals would certainly be counter-productive.

The above contradictions turned me off the first time I read King's article. It took a second and a third reading to appreciate the logic of his discussion leading to a valid final conclusion.

Lt Col Calvin D. Black, USA

Confusing American English

During my two and a half years at Fort Leavenworth, I have become more and more convinced that Sir Winston Churchill was correct when he claimed that the Americans and the British were two people divided by a single language. That the Americans are evolving their own version of the English language is evidenced by such well-known perversions as suspenders (for braces), hood (for bonnet of an automobile (for car)) and dove (for dived). But I had not realized the process of evolution had reached the stage of devising new and fully declined verbs. The source of this discovery was a publication called "This is DARCOM," "DARCOM" being the new verb. On the first page was listed the complete declension of this verb. This declension will be of great interest to the linguistic buffs (for enthusiasts) among your readers by reason of its extremely radical root-changing. For their benefit, I list the declension of the American verb "darcom," the meaning of which I have yet to ascertain. I believe it has something to do with moving oneself toward one's doom.

darcom - infinitive
arrcom - present
arradcom - imperfect
eradcom - perfect
avradcom - pluperfect
mircom - future
meradcom - future perfect
miradcom - future imperfect
cercom - present subjunctive
coradcom - past subjunctive
descom - future subjunctive
tsarcom - imperative

I have also discovered forms of "darcom" which appear to refer to the mode of movement. For instance, "tarcom" and "taradcom" must describe movement by road, while "usailcom" and possibly "navadcom" are forms of the maritime application. So far, I have found nothing alluding to air travel.

Lt Col Peter J. Pearson,
Australian Exchange Instructor,
USACGSC

Lieutenant Colonel Pearson overlooked the simple past tense of the verb darcom which is darcame.—Editor.

Reader Forum is a service designed expressly to afford our readers an opportunity to air their opinions and ideas on military topics. It is not restricted to comments or rebuttals on previously published material but is open, as the title implies, to any variety of expression which may stimulate or improve the value of thought in the military community.

The right to edit is reserved by the staff of the magazine and exercised primarily in deference to available space — Editor

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WE ARE CHANGING

This is the last issue of *Military Review*—in its current format, that is. The familiar 6 × 9-inch size gives way next month to a larger 7¼ × 9¾-inch format.

Last summer, we conducted a large population, statistically valid, random survey of field grade officers, the primary audience of your journal. The survey addressed the Total Army—Active, National Guard and Army Reserve.

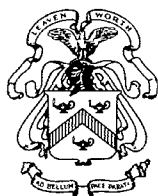
Much useful data were obtained. We are capitalizing on it. Some more significant results showed 85 percent perceived a need for a journal to enhance professional development, and 79 percent saw *Military Review* as accomplishing that task. We found 64 percent considered themselves regular readers as opposed to browsers or nonreaders. Only 27 percent preferred the same number and length of articles as was the norm, but 42 percent wanted a mix of long and short articles. Half our officers liked the size, but 25 percent preferred a *Time*-sized journal. And 58 percent considered appearance of *MR* to have a major effect on reader appeal.

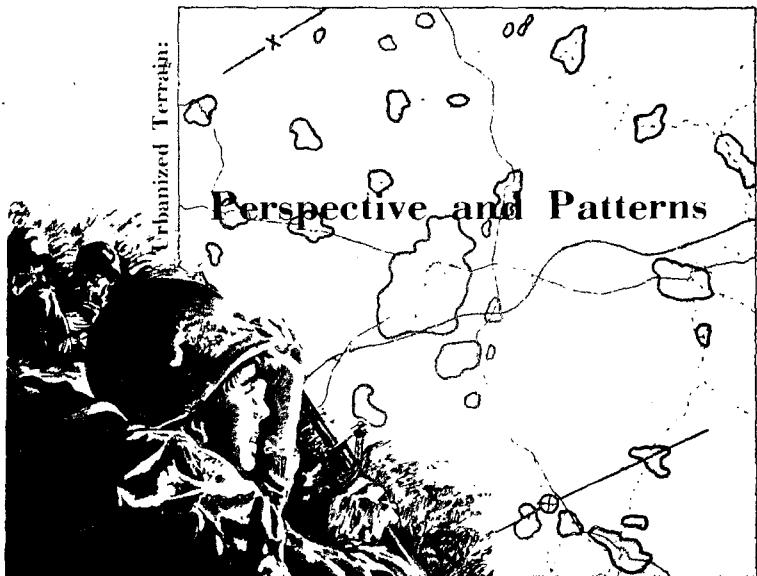
These facts and many others caused us to redesign *Military Review* starting with the April issue. In January, we shifted to larger type faces and more open layouts.

Next month, look for a complete change in design. We are modernizing. Our logo changes. We have new names for our standing departments. The larger pages lend themselves to more effective use of pictures and line art. Our cover will be on stock which will allow us a wider selection of artwork and cleaner reproduction.

On the mechanical side, the saddle stitch binding as found in this issue goes, to be replaced with a perfect bind which should increase the magazine's durability and appearance.

Although we are modernizing in line with reader preferences stated in response to our survey, we pledge to continue printing high-quality and thought-provoking articles for our readers. As the professional journal of the US Army, we remain a forum for discussion of issues that affect the military throughout the world and serve as a vehicle of continued professional development among our Total Army officer corps especially among the field grade ranks.





Lieutenant Colonel John W. Burberry Jr., US Army, Retired

THE terrain in Western Europe is, for all tactical purposes, urbanized. Terrain that once contained ample maneuver space between urban areas is now virtually covered by man-made structures such as buildings, roads and canals. Where this has not yet occurred, much of the ground is covered with forests and steep hills, topographical features that also tend to be severely restrictive in terms of tactical movement. Our doctrinal response to this urbanization of terrain is deficient.

That urbanization is not yet fully appreciated is evident in our planning and training. We speak of fast-moving tactics, with our war game players by-passing the buildup areas. Our terrain

analysis searches for avenues of approach within the context of open terrain. We plan on fighting in gaps, such as the Fulda gap, which, because of urbanization, may no longer permit open-terrain tactics.

Increasing attention focuses on combat in cities (CIC) and the actions required therein by the company and the battalion. Here, lost doctrines and techniques are being revived, haltingly but surely. The Army is not, however, looking at the conduct of military operations on urbanized terrain from a brigade and division perspective.

Why does the Army need a brigade and division perspective? Because the point of view from which we survey operations is

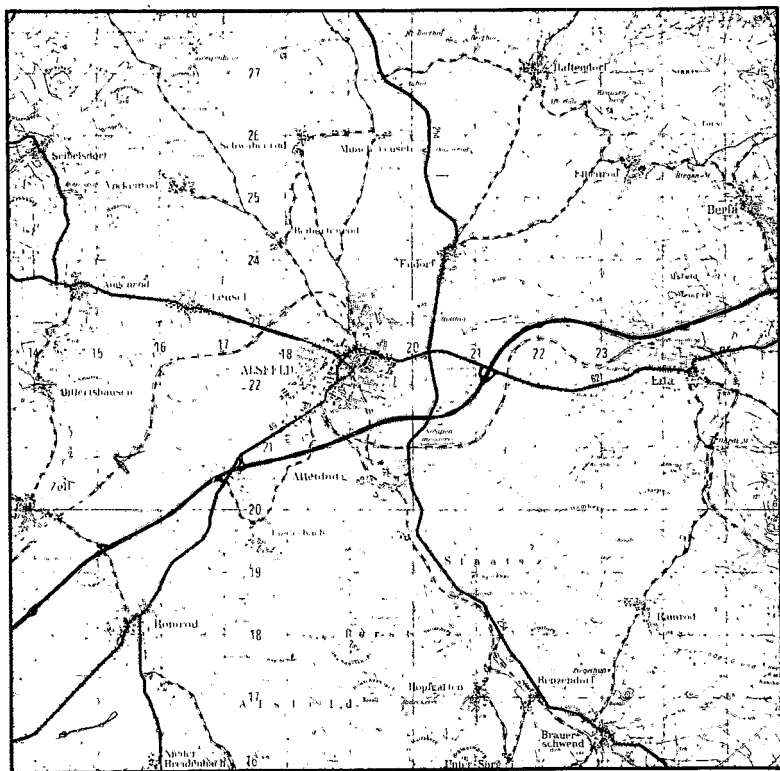


Figure 1

critical to a proper understanding of them. If, for example, we view terrain from the foot soldier's perspective, we may well conclude, contrary to reality, that the world is flat.

There are simply too many individual urban areas for a brigade or division commander to

analyze one by one. Studies show that the average brigade sector in Western Europe encompasses 25 towns with populations up to 3,000 (Figure 1).¹ This does not include the larger towns and cities found in brigade sectors.

Company and battalion commanders must consider these in-

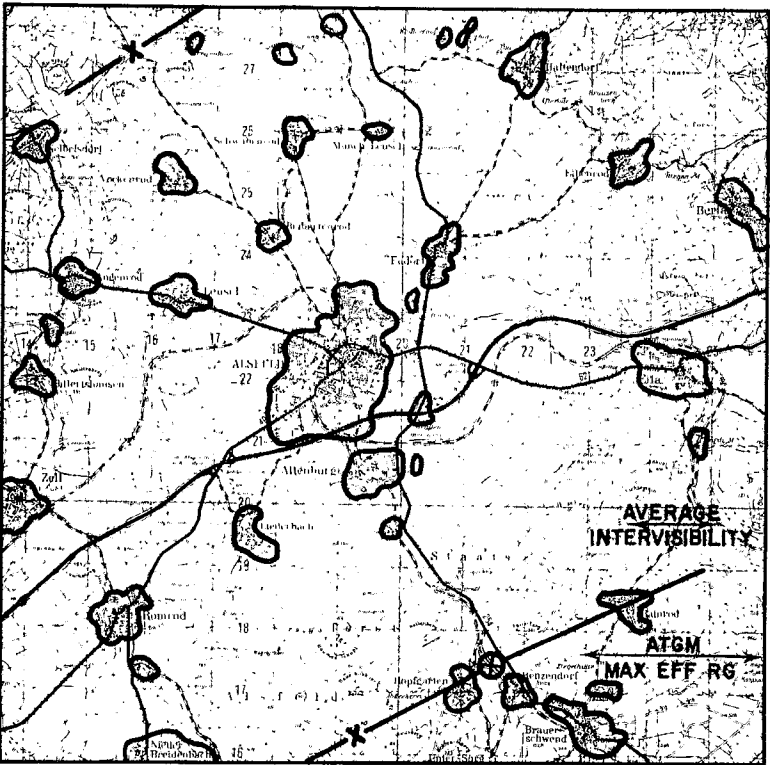


Figure 2

dividual towns in their operational schemes. If, however, brigade and division commanders focus on these, they may miss the big picture with its tactically significant patterns of urbanization.

When the urbanized terrain of Western Europe is analyzed from

the brigade and division perspective, we find patterns of tactical significance. For example, if a line is drawn around each urban area, we observe that they occur in a hub pattern, a satellite pattern, a network pattern and a segment or pie-slice pattern (Figure 2). These patterns and

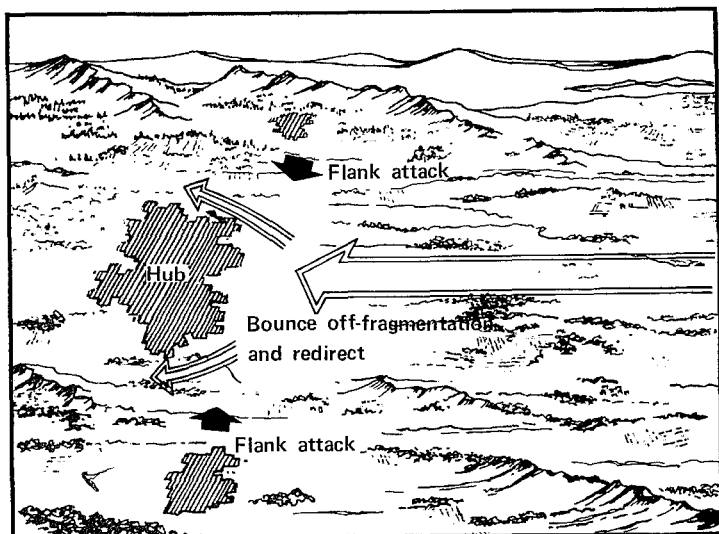


Figure 3 Hub Pattern

their effects constitute the building blocks for a tactical analysis of urbanized terrain from the brigade and division perspective.

A hub pattern is always present (Figure 3). The hub pattern consists of an urban area with radiating transportation and communication links to other hubs. By itself, the hub requires CIC techniques. As part of an urbanized terrain pattern, however, it serves, with significant tactical impact, as an axle for the larger battle.

As shown in Figure 3, the most important effect is that attacking

forces will bounce off hubs, fragment and then move forward in a different direction. The fragmentation reduces an attacker's momentum, making him more vulnerable to flank attacks along the new line of advance. Commanders may expect a dramatic reorientation of the attacker's direction. For example, following the fragmentation process, the attacker may advance north to south even though his initial direction was east to west.

The funnel-and-fan effect (Figure 4) occurs when a hub lies between natural terrain features that impede the maneuver of

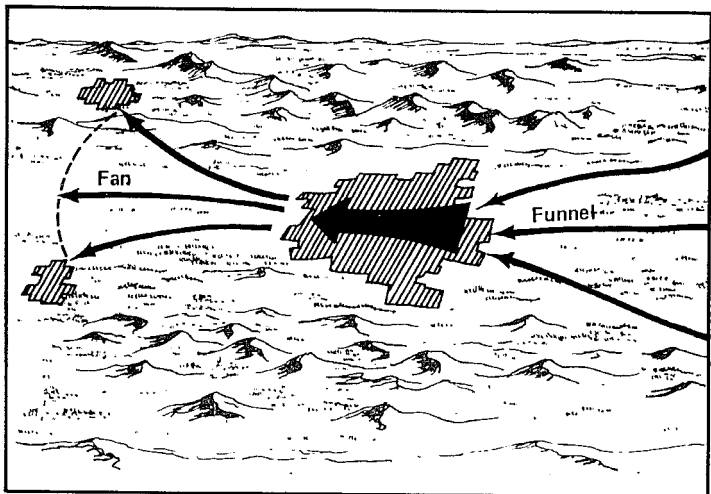


Figure 4 Funnel-and-Fan Effect

mechanized forces. As shown in Figure 4, passage of units into the area results in canalization; traffic exiting the area tends to spread out or to fan. There is a sequence of tactical significance inherent in this effect in that it initially favors the defense and hinders the offense. If the hub is captured, however, it then facilitates offensive operations. An attacker, risking canalization in the funnel, gains the advantages of the fan if his operation succeeds. An unsuccessful defense, on the other hand, yields much more than a single urban area; because of the fan effect, the successful attacker gains access to a network of transportation and

maneuver links to other hubs.

The satellite pattern (Figure 5) occurs because of the smaller hubs present around a larger hub. Figure 5 depicts urban satellites of a larger urban area. The satellite towns normally serve as interdependent market towns and provide the terminals for communication and transportation links. They are the nodes in a network as shown in Figure 6. It is this network, a functional extension of the satellite pattern, that is of principal tactical interest.

The network pattern occurs because of the interlocking feature of the hub and satellite. This has been termed the "breakwater"

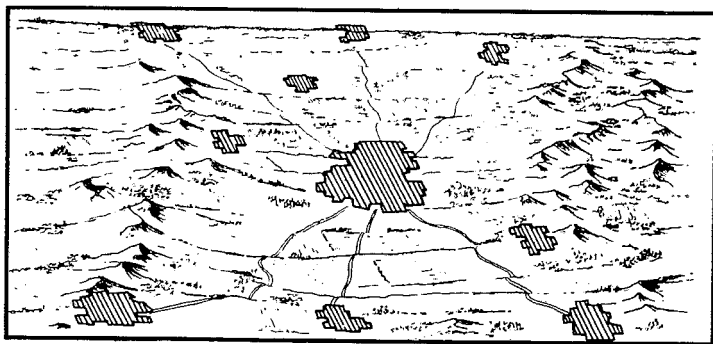


Figure 5 Satellite Pattern

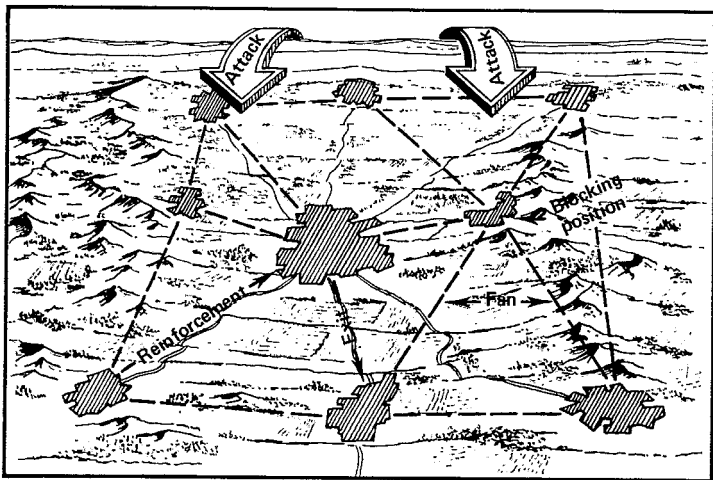


Figure 6 Network or "Breakwater" Pattern

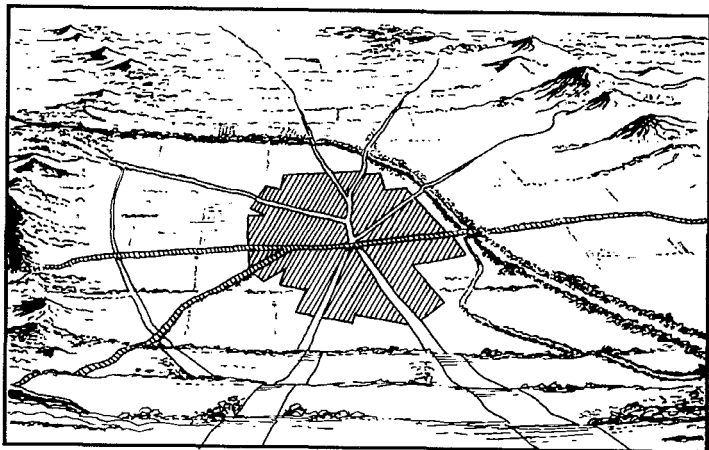


Figure 7 Segment or Pie Slice Pattern

pattern because forces attempting passage confront a pattern of obstacles that tends to disrupt their flow.²

As seen in Figure 6, the nodes or satellites give tactical support to the central urban area by providing bases for reinforcement and mutually supporting battle or blocking positions for the defender. For the attacker, they terminate avenues of approach and serve as springboards for entry into the fan effect.

This pattern tends to invalidate the doctrine of by-pass. A glance at the urban areas in the brigade sector (Figure 2) shows that no avenue of approach is masked from a potential gauntlet of antitank fires targeted on the

ready-made kill zones between nodes. The adjacent natural terrain, impracticable for vehicular movement, contributes to the restricting and delaying effect.

Another consideration is the impact on task organization. The difficulties inherent in attempting to penetrate this antiarmor network require a task organization that is heavy in infantry and engineers but relatively light in armor.

The segment or pie-slice pattern (Figure 7) occurs as a result of the partition of the terrain by man-made features such as roads, dikes and canals. This may be considered part of the hub-satellite-network patterns

URBANIZED TERRAIN

and effects. Its unique effect, however, is to influence the organization of the terrain and the task organization by providing ready-made boundaries. Whereas streets and city blocks provide boundaries for CIC, these larger man-made segmenting features offer ready-made boundaries for operations on urbanized terrain.

No longer can we entertain the fantasy that Western Europe is

the terrain equivalent of Fort Hood, Texas. Doctrine, plans, brigades and divisions must respond to the tactical implications of the patterns presented by urban areas and the urbanized terrain. Our doctrine cannot rest on terrain analysis learned on the rolling, open plains of Kansas. We must see terrain on which we may have to fight for what it is, not for what we would like it to be.

NOTES

1 Federal Republic of Germany Special Training Manual for Combat Troops, Number 3/76/1976, p 5.

2 Term attributed by some to Adolf Hitler. There was considerable interest

shown by the German military in the series of lectures published in 1932 by British Major General J. F. C. Fuller as "Field Service Regulations III." This seminal work forms the basis for "The Archipelago Defense" by Major L. Wayne Kleinstiver in *Infantry*, March-April 1974.



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The Limits of Military Intervention:

A Propositional Inventory

Morris Janowitz and Ellen P. Stern

IT IS NECESSARY to re-evaluate continuously the obvious but basic postulate that, with the advent of nuclear weapons, powerful limitations condition the scope and pattern of military intervention by the United States. Such an assessment involves both threatened actions and those in fact. The potential and actual use of force in international relations traditionally has operated under real and self-imposed limitations. The purpose of this article is to present a series of propositions which highlight the increased limitations on the use of military intervention by the United States.

To assert increased limitations on the use of force is hardly to deny its crucial and fundamental role in the world community. The ideas presented are designed to stimulate analysis and investigation as well as debate about national policy. The underlying intellectual strategy is that the application of social sciences analytic tools to issues of military strategy is enhanced by examining specific propositions, thus avoiding arguments based on ideological distortions and overly abstracted concepts in the study of international relations.

For a more detailed exposition of the analysis found in this article, see *The Limits of Military Intervention. Contemporary Dimensions*, Edited by Ellen Stern, Sage Publications, Inc., Beverly Hills, Calif., 1977

MILITARY INTERVENTION

Military intervention implies an active, calculated step, a forceful interference in another nation's external and internal affairs, to maintain or change a condition or situation, presuming this coercion will benefit or protect the initiator. Such action can be described in many ways. Military engagements can range from guerrilla tactics to conventional battle between the most sophisticated professionals, from weaponry of limited destructive capacity to the H-bomb.

Further, intervention is usually followed by counterintervention, whether it be steps taken to prevent initial intervention or whether it be an answer in kind—more defensive perhaps than offensive. During a period of deterrence, there is great pressure to make counterintervention contingencies readily available. But there exist powerful countervailing measures of politics and economics which limit or even displace military intervention activities. As a result, programs of countermilitary intervention also require careful and continual reassessment.

The specific propositions which follow relate to a series of broader observations about the trends in the international arena. First, the considerations of military détente between the two superpowers present a complex and prolonged process, but one which will be sustained by the realities of military technology and



Morris Janowitz is a distinguished service professor and chairman of the Department of Sociology at the University of Chicago and editor of Armed Forces and Society: An Interdisciplinary Journal.



Ellen P. Stern is associate editor of Armed Forces and Society. She received a B.A. in Slavic area studies from the University of Illinois and an M.A. in international relations from the University of Southern California.

by the pressures of international relations.

Second, as the United States has embarked upon an all-volunteer force system, so, too, have most of the NATO nations moved toward shorter conscription periods, instituted volunteer military service or explored alternative manpower patterns. However, there is no counterpart trend in the Warsaw Pact countries.

Third, there are new developments in weapons technology which, while not as dramatic as the introduction of nuclear weapons and intercontinental missiles, have a profound potential for influencing international political and military relations.

Fourth, the changing social structure of the advanced nations with multiparty political systems is creating social patterns and internal tensions which are deeply influencing the political and military definition of international relations and altering the all-important dimension of threat perception.

Fifth, the emergence of political independence in the former colonial and so-called developing nations has been accompanied by increased military tensions among these nations which contributes to the worldwide process of dispersion of political power.

Our perspective is concerned with organizational analysis or "institutionalization." The focus is on the interplay between technology, military organization, political decisionmaking and the politico-military consequences that emerge. The scope of the propositions seeks to be worldwide since our analysis is concerned with the conceptual dimensions of the issues. The time period is contemporary—that is, the present and the immediate future. However, depending upon the question at hand, it may be necessary at times to reach back into history. In effect, we are continuing the intellectual tradition of Harold D. Lasswell's "developmental analysis." Our goal is not to anticipate the future but, rather, to clarify the present so that it can be better understood and thereby managed more effectively.

Finally, our emphasis on the limitations of military intervention serves only as an analytic device. By a concern with limitations, it is possible to highlight changes which are taking place in the role of force and violence in international relations.

The first proposition deals with new developments in the technology of conventional military weapons. Subsequent propositions, taken from a larger universe of propositions, are designed to encompass the full range of intervention from military alerts to actual military operations—air, naval and ground. It is essential to offer propositions which deal explicitly with particular forms of politico-military operations such as military demonstrations, military assistance programs and "counterin-

MILITARY INTERVENTION

urgency." Finally, propositions concerning constraints derived from questions of manpower, military professionalism, intelligence operations, US public opinion and the national decision-making process are presented.

Proposition One: Conventional Weapons Technology

The development of a new generation of conventional weapons—namely, precision guided missiles—serve to enlarge the limitations on military intervention. From the US point of view, the development of a new generation of conventional weapons has increased its counterintervention capabilities. This is especially applicable in the crucial NATO-Warsaw Pact zone of conflict management.

Precision guided missiles increase both the accuracy and destructive power of conventional armaments and reduce the importance of the numerical superiority of the adversary. Basically, these weapons increase the defensive ability of conventional military forces. The higher destructive capacity of these weapons results in a more rapid attrition of committed military forces as well. If this line of reasoning is correct, then it is possible to assess the consequences of precision guided missiles as increasing the indeterminacy of the military outcome of conventional battles. It, therefore, serves to increase the limits of military intervention.

Proposition Two: Military Alerts

Within the framework of the US security establishment, the pervasive tension between civilian political leaders and military commanders about the role of military alerts complicates management of such alerts and serves to limit their effectiveness.

In a period of disjointed search for military détente, the function of military alerts emerges as ambiguous and is fraught with potentials of miscalculations and misunderstanding. But there is still a strong tendency to make use of military alerts. The superpowers resort to their use—in varying levels and intensity—to signal diplomatic and strategic messages and intents.

In the United States, there is a considerable difference of

opinion about alerts between civilian political leaders and military officials. Political leaders tend to seek the minimum level of mobilization and wish to articulate the alert with corollary diplomatic messages. However, the military commanders press for rapid and extensive mobilization in order to maximize resources for various options, to maintain operational effectiveness and to make their message and intent credible. Tensions between factions make it difficult to modulate military alerts. As a result, alerts tend to be characterized by overreaction and loss of effectiveness. Under these circumstances, they also run the risk of being misunderstood.

Proposition Three: Command, Control and Communications

The growth in the complexity of weapons systems and in the format of military organization has proceeded more rapidly than the development of an effective system of command, control and communications (C³). Resulting complications are persistent and, in fact, denote increased limitations on the part of decisionmakers to manage the instruments of military intervention effectively.

Whether one is dealing with military alerts or with the actual applications of military force, C³ raises issues of the interface between technology and political behavior. An effective C³ system is not a substitute for well-developed and meaningful policy. In the setting of worldwide deterrence, effective decisionmaking will, of necessity, involve the President and his advisers. The C³ system must serve as their immediate locale.

There is a wealth of evidence to underline the technological and human barriers in the existing arrangements given the present weapons systems. Our proposition is grounded in evidence ranging from the ambiguities of the *Mayaguez* affairs to the carefully documented report of February 1977 by the General Accounting Office on the weakness in the C³ structure of the US military.

Proposition Four: Changing Military Operations—Airlift

The capabilities of the United States to support its own military interventions or those of its allies by means of airlift of military resources have declined and thereby have expanded the

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limits of military intervention. In a like fashion, the capabilities for this type of counterintervention have narrowed as well.

Today, a central element of US military strategy rests on the use of airlift, both in support of NATO forces and other allied nations (especially Israel). The basic limitations in airlift are twofold; the first is available military equipment, and the second is access to overseas bases. The available equipment determines the upper limit of airlift operations. It is problematic whether these resources match potential commitment and requirements. Moreover, there has been a decline in available overseas bases for transit and refueling, thereby limiting the range and scope and extent of airlift operations. Most important, political considerations may drastically reduce access to overseas bases. While airborne refueling is possible, its cost and effectiveness further reduces airlift capabilities.

Proposition Five: Changing Military Operations—Naval

As a result of the development of the new generation of precision guided missiles, the scope of intervention by US naval forces has been sharply limited. It is essential to emphasize that these new conventional weapons are becoming an integral aspect of naval warfare.

Naval units are becoming increasingly vulnerable to damaging attack by these weapons. These weapons are part of the arsenal of deterrence between the major powers, and they introduce an important element of instability. Moreover, they are relatively inexpensive and widely available to less powerful nations.

Although these weapons involve technical problems of maintenance and control, they permit smaller powers to challenge the naval operations of superpowers. In addition, the extension of national sovereignty over larger areas of coastal waters and the potential constriction of passage through waterways and straits serve to limit everyone's scope of naval operations.

Proposition Six: Changing Military Operations—Conventional Ground Warfare

Conventional ground warfare is profoundly influenced by the development of the new generation of weapons. As noted under Proposition One, military strategy is strengthened in its defensive

posture, and this has special relevance for the United States in the European zone. However, the introduction of precision guided missiles has been accompanied by an intensified arms buildup, reflecting the element of indeterminacy which the new weapons have introduced.

In the post-Vietnam period, the NATO/Warsaw Pact front has emerged as the focal point for conventional forces and the issues of conflict management. Because of the impact of precision guided missiles, US forces in Western Europe must operate more and more as a force in being and less as a force for mobilization. Warning time for an attack may well have been reduced. The anticipated attrition rate of military resources has increased so that existing stocks in place become more important in the maintenance of defensive effectiveness. The introduction of precision guided missiles has resulted in an arms buildup which represents both a military response and an adjustment to contending political pressures. In return, it has become central to US foreign policy to include conventional forces in the arms control agenda with the Soviet Union.

Proposition Seven: Sales and Assistance Programs

Military support programs, either by military sales or by military assistance programs, can be judged to have only a marginal effect on US security although they have come to be institutionalized aspects of US diplomacy. In turn, because of the increased reluctance of client states to accept military assistance or purchase weapons in exchange for US direction of their military policy and practices, this form of military intervention is not likely to grow in consequence.

Although military assistance programs came into being on the basis of realistic justifications and under the impact of a "real politik," it does not necessarily mean that successes have outweighed failures. Nor does it mean that the United States could have avoided such programs although the scope and number might well have been limited. Selected developing nations, especially those with resources resulting from their energy and raw material reserves, are certain to follow a more independent policy, both in their accession of arms and in their political posture.

There is little reason to expect that these programs will be abandoned by the United States. Domestic political pressures and

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desire for economic sales are at work. Moreover, to the American citizen, they have come to symbolize that the United States is a superpower. But there is good reason to believe that their inherent limitations will lead to constriction of these enterprises.

Proposition Eight: Counterinsurgency

Since the end of the Vietnam period, the likelihood of large-scale and overt military intervention and even small-scale military intervention in support of counterinsurgency operations by the United States can be expected to remain low. The assessment of the successes and failures of the intervention in Vietnam has produced a definite clarification of future political interests. Credible military doctrines, however, have not emerged.

Political scientists who engage in the analysis of current events stress that changing international realities modify public attitudes, a topic which will be discussed later. This perspective overlooks the essential issue. The ability of the executive to implement military intervention of this type has been contained by political posture and concerns of Congressional leaders. One of the impacts of Vietnam has been to produce a demand for sharper definition of the goals of such military intervention. Moreover, it is of central importance to note that ground-force military leaders are reluctant to fight such engagements again.

For the US military, planning for counterinsurgency is limited and the allocation of military resources minimal. To be realistic, the US military, particularly the ground forces, is more concerned with modern versions of World War II battles in Europe.

Proposition Nine: Military Manpower and Professionalism

Elimination of the conscripted armed force has produced a military of decreasing size, increasing cost, lower quality and less social representativeness. Together with the profound dilemmas of military professionalism in the contemporary period, they increase limitations on military intervention.

The necessity of a force in being for the tasks of worldwide

deterrence has, in parliamentary political systems, undermined the legitimacy of the traditions of mass conscription. The United States elected to implement an all-volunteer force based on financial incentives, regulated by the criteria of marketplace compensation. It could have elected to implement a system of voluntary national service with choice between military and civilian service.

The consequences have deep implications in altering the character of the US military establishment. We are not faced with a crisis in military organization or manpower but with widespread and continuing money problems which limit the effectiveness of the military establishment. There is every reason to believe there is only limited political support for a return to conscription and that traditional conscription format would probably not fit the needs of a "force in being."

Proposition Ten: Intelligence Operations

For the United States, the organizational and operational control of the intelligence community serves as powerful and persistent limitation on military intervention. However, the reconstruction of the intelligence community will require a considerable amount of time.

This proposition does not rest on the technical ability of the intelligence community to collect information on the weaponry and the order of battle of adversaries or to intercept secret instructions among adversaries or even allied partners. The central issue is the lack of public and private confidence in the political assessments which must be made from the information collected by the intelligence community.

Intelligence organizations have an inherent tendency to augment their information collection and assessment function with the sponsorship of covert operations, including black propaganda, bribery, deception, secret support for political groups and covert military operations. These covert operations undermine the effectiveness of the conventional intelligence operations, and, in a political democracy, the credibility of the assessments introduced by intelligence agencies is weakened by the inevitable exposure of the covert operations. The US Congress and the President have yet to develop mechanisms for effective direction and control of the intelligence community.

Proposition Eleven: Public Opinion and Citizen Attitudes

Public opinion in the 1970s and the volatility of citizen attitudes have placed increased and powerful restraints on US military intervention.

The background of this proposition is rooted in the accumulated experiences since World War II. During World War II, public opinion trends moved toward greater support of military operations. During the limited wars of Korea and Vietnam, there was a noticeable decline in popular support for military intervention. Although the downward trend in support of military expenditures since World War II has been reversed since 1975, public attitudes about US international responsibilities have become more constricted. Moreover, given the domestic pressures caused by "stagflation," public opinion has become more volatile on a wide range of issues. These patterns will operate to limit the ability of civilian political leaders to effect military intervention. The erosion of support can be anticipated as rapid and extensive even when particular interventions are popular initially.

Proposition Twelve: National Decisionmaking

Relations between the President and the Congress operate to limit the effectiveness in formulating national military policy and, in turn, in the management of military intervention.

It can be argued that the national decisionmaking process fragments the political institutions involved in controlling military intervention. The decisionmaking process is one which gives the military extensive access and influence, but on an individual service basis, and, therefore, is detrimental to national objectives. The result is that increased military potentials are not articulated with foreign policy objectives and are likely to remain so until there emerges a new and more effective articulation between the Executive, the executive agencies and the Congress.

There is always the possibility of unexpected development—political or technological. Moreover, the scope and intent of adversaries' programs are subject to widely different assessments as has been the case in the Soviet military buildup of the 1970s.

Underlining our inventory of propositions is the assumption that the main outlines of international military balance emerge gradually and with reasonable clarity. The result is that the contending powers can adjust their response at a deliberate and measured pace. As a result, it appears reasonable to assume that nuclear parity between the United States and the Soviet Union will be maintained rather than greatly altered. The US political leadership could not and would not tolerate a distinct imbalance. In other words, there is a worldwide system of strategic military forces with a reasonable degree of stability which sets the framework in which the issues of the limitations and consequences of military intervention can be analyzed at any given moment.

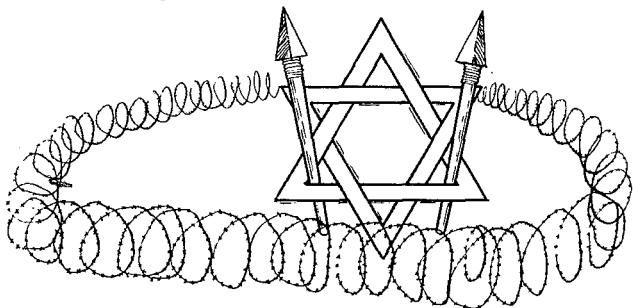
In the post-World War II period, there was the possibility that particular technological developments would either drastically alter the world strategic balance or that the domestic political weakness would prevent the leadership of the superpowers from developing essential international controls. Clearly, the prospects of nuclear warheads in outerspace or deployed in the seabed would have represented such a state—a state in which the level of nuclear terror would become intolerable. Both of these circumstances have been avoided.

The prospect of a laser weapon which would eliminate surveillance systems represents a contemporary equivalent. Either the superpowers create an effective protocol—explicit or implicit—or the pursuit of these weapons will alter the nature of international relations to the point at which rational discussion will become meaningless.

Crisis situations will arise where a military response is deemed to be proper, but the decisionmakers will have to operate within a narrow scope and fixed time frame. Moreover, the propositions about increased limits on military intervention rest, in part, on the scope and effectiveness of counterintervention. The search for deterrence, and beyond that for stabilization, remains paramount along the entire continuum of military and politico-military operations.

Those who advocate the use of military force for intervention will have to be more precise about the goals to be achieved and the price to be paid. Analytic analysis and effective political leaders, of necessity, must converge. US military and security postures remain worldwide in scope. This is dictated by the interdependence of the world community and the nature of contemporary weapons. But recognition of the limits of military intervention can only make for more realistic and more effective policies and practices. ■

Israel's Defense Doctrine: Background and Dynamics



Major General Israel Tal, Israeli Army Reserve

SOME TIME AGO, I had the occasion to examine transcripts dating from the 1950s when the defense concept and doctrine of the structure and organization of the IDF (Israeli Defense Forces) were being formulated by the General Staffs of those years. I and others of my generation, who were all young men then, tended to regard the heads of the General Staff as somewhat "past it" and not too bright.

We wondered impatiently why on earth they were not replaced. But it has since become clear that all our military thinking since then amounts to little more than a series of footnotes to the military thoughts that were crystalized then. We should, therefore, make

it our business to know what the doctrines formulated then were based on. Although we have added paint and plaster over the years, improved and renovated—spoiled and damaged—the basic structure remains the same.

The Basic Assumptions

The main consideration influencing the planners of the 1950s was connected with their conception of the purpose of the state—the mission of the state of Israel. This was the dominant consideration affecting their thinking and conclusions in everything regarding the defense doctrine, structure and

organization of the IDF. A second factor of decisive importance was the problem of the few against the many posed by Israel's numerical inferiority to its enemies. A third factor was the sober realization that we did not have the option of gaining a final and definite national decision by means of the military defeat of our enemies.

On the other hand, if the Arabs ever succeeded in gaining a military victory over Israel, their victory would be final. The

Israelis may win wars, but they cannot decide the fate of the conflict by these means nor impose their will on a region stretching from the Atlantic Ocean to the Persian Gulf.

Two basic assumptions also were made regarding the aims of war: the destruction of forces and the conquest of territory. It was clear that the destruction of forces bestowed only a temporary advantage since the resources of the Arab world in manpower and materiel in comparison to our own were unlimited. Conquered territory would be hard to hold since the world system would oppose one-sided annexations in the conditions of international order existing after two world wars. The conquest of territory was, therefore, seen as granting a strategic advantage and as a bargaining card in the framework of negotiations on borders and peace settlements.

The geographical factor had a decisive influence on the defense concept, the doctrine of war and the structure of our forces. Even in the era of "individual weapons," when infantry formations were the assaulting echelons of land warfare, it was clear that we had no strategic depth and, therefore, no freedom of choice between a rigid and flexible defense. The generation responsible for shaping Israel's military thinking was not unaware of the advantages latent in the geographical data—that is, the advantage conferred by internal lines of communication.



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The Basic Principles for the Organization of Military Forces

It was clear that Israel's military superiority would have to be based on the qualitative superiority of Israel's society in every area: ethical, cultural, scientific and technological—on a difference in essence not only in degree. In military terms, our qualitative superiority would have to be expressed in superior morale, motivation, scientific and technological expertise, professional virtuosity and original military thinking. The following principles were the base of our concept in building military power:

- Full exploitation of all the national resources in time of war. Israel's ground forces are based on the militia principle—that is, the whole nation is the army. In normal times, the citizens of Israel engage in every sphere of creation and production connected with the building of their country and society. In times of war, everyone is called to the flag. In this way, Israel is able to maintain the biggest army in the world in relation to the size of its population. The principle of full exploitation of resources also is applied in the "area defense" system which embraces youths, women and men too old to find their place in the assault echelons. Moreover, the IDF is a militia-type army not only in terms of its manpower, but also in terms of its equipment. The founders of

Israel's military doctrines envisaged a dual role for all the equipment and vehicles (including, at the time, horses and mules) in the country. In times of peace, they would constitute the infrastructure of the civilian activities, and, in wartime, they would be mobilized and become a part of the military logistic framework.

- In order to maintain militia ground forces facing large standing Arab armies, the intelligence corps, the air force and the navy must be standing forces. Intelligence must provide an early warning in order to enable the effective mobilization and deployment of the militia army. The air force has to cover the mobilization and deployment process by providing protection against air raids and support the standing army in containing enemy offensives by its overwhelming firepower until the main ground forces can concentrate their full strength. (The air arm is conceived of as the most versatile, flexible and fastest force capable of intervening within minutes in every theater.) The navy must demonstrate a permanent presence at sea since the maintenance of maritime sovereignty is a permanent task not limited to wartime. Of course, certain technical and economic considerations also necessitated the establishment of the air force and navy mainly as regular services.

- The creation of artificial strategic depth by means of area

defense. Since we have no natural depth, every settlement becomes a fighting position in wartime. The area defense framework also operates as an organization enabling the maximum exploitation of manpower in accordance with the principle of full exploitation of resources. In the field of operational doctrine, it was considered axiomatic that the war should be carried deep into enemy territory with all possible speed for the following reasons:

—The lack of strategic depth endangers us since the initial success of an enemy offensive and the attainment of its immediate operational and tactical objectives could mean, from our point of view, the loss of vital strategic objectives such as population, economic and industrial centers.

—A quick decision is vital to Israel due to the anticipated intervention of the great powers and the need to avoid a high number of casualties in long battles of attrition. Due to our quantitative inferiority, it is impossible for us to compete with them for long in terms of the pulverization of resources.

—We must conclude our wars with the advantage clearly on our side. The Arabs must be the losers, and we must be in a position to offer them something in exchange for the political settlements desirable to us.

—The founders understood something which many of us have only come to understand after the experience of the 1973 October War. The results of a war are

judged also by their long-term effects on the society and national morale. They understood that the state of mind of the individual and the society are no less important than the military, political or economic situation after the war.

The Defense Doctrine as Tested by War

I have attempted to describe some of the main points in the defense doctrine established by the policymakers during the 1950s and the 1960s. This is not the place for an examination of the methods by which the principles were applied in practice—in the combat doctrine, organization, training, development, equipment and education of the IDF. I will attempt only to see how the principles of our defense doctrine were applied in the various wars fought by the state of Israel.

The War of Independence. It is important for us to understand this war, if only because we were facing the same problem then which confronted the Arabs when they were preparing for the 1973 October War against us—namely, the superiority of enemy firepower. It is well known that, in 1948, the problem of the “few versus the many” was extremely acute, with a population of 650,000 Jews facing millions of Arabs. But, when we examine the data in detail, it transpires that a distinction must be made between

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the general national balance of power and the actual military forces ratio."

It is true that, from the point of view of the general national ratio of power, the Arabs enjoyed the quantitative superiority in terms of manpower, materiel resources and weapons. But, since this national potential was not fully realized, the problem of quantitative superiority on the battlefield was of a rather different nature than what has commonly been supposed. The problem was not one of an intolerable superiority in the size of the Arab forces but, rather, of their overwhelming superiority in firepower.

The Arab armies were regular armies, well-equipped with individual, platoon, company and battalion weapons. They also possessed armor, artillery and air forces. We, on the other hand, were a young army which had just emerged from the underground with a variety of improvised weapons. In that period, the Middle East had not yet undergone the revolution in the art of war which had begun in World War I and reached a climax in World War II with crew-served weapons and sophisticated systems replacing individual weapons as the decisive means of warfare.

In the War of Independence, crew-served weapons still played only a supporting role. The Arab firepower was insufficient to prevent us from concentrating our forces and executing our approach

march. On the strategic and operational levels, Arab fire was no more than harassing; on the tactical level, however, it had great significance. In the stage of "fighting to the objective," fire fights play a vital role, and we were unable to compete successfully with the Arabs due to their overwhelmingly superior firepower. We were forced to find a solution, and we found it by avoiding the fire fight and avoiding the entire fighting to the objective phase.

Instead of reaching the objective by force, we chose to reach it whenever possible by stealth. Instead of covering our movements mainly by silencing the sources of enemy fire, we covered our movements by darkness, thus rendering the Arab fire less effective and making it possible for us to move through it without having to silence it. In this way, we managed to give expression to our qualitative superiority since, by avoiding the stage of "fighting to the objective" and entering the stage of "fighting on the objective," we obliged the Arab soldier to face the Israeli soldier in close combat. It was man against man, grenade against grenade and bayonet against bayonet. At this stage of fighting, supporting firepower is not of decisive importance.

In the War of Independence, we found the optimal answer to the problem facing us. We adopted a doctrine of assault and decision based on night warfare of the assault echelon which was com-



Soldiers en route to the Suez Canal, Six-Day War, 1967

posed, at that time, mainly of infantry units and formations.

The Sinai Campaign—1956. With this war, our region made the shift from the era of individual to that of crew-served weapons. From now on, the wars between Israel and the Arab states would be “modern” wars: massive clashes between aircraft and aircraft; tanks and tanks; tremendous firepower and electronic systems on land, in the air and on the sea. Large mobile armored formations composed of all arms would wage the land war.

The principle of conducting the war deep inside the enemy’s territory was inherent in the very nature of the Sinai Campaign. We delivered the first blow because of the circumstances and as a result

of a specific plan, not because the theory of the first blow had become axiomatic in our defense doctrine. On the contrary, it was only after the Sinai Campaign, in the face of the Arab military buildup and their modern means of warfare, that it became a principle to deliver the first blow whenever a threatening situation developed as a result of the concentration of regular Arab forces in the proximity of our borders.

The Six-Day War—1967. The principles of delivering the first blow and transferring the war deep into enemy territory were exploited to the full in this war. Crew-served weapon systems carried the assault and brought us victory in every theater with superiority in firepower on our

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side., Beginning with the Six-Day War and up to the 1973 October War, our superiority increased steadily. And, despite the quantitative superiority of the Arabs in artillery, we gained an absolute quantitative superiority in overall firepower due both to the growth in our air power and to the qualitative superiority of the Israeli Air Force.

The War of Attrition. The manner in which we conducted the War of Attrition which followed in the wake of the Six-Day War was made possible only by virtue of our air force. We held the Suez Canal line by a rigid and static defense, and only our air cover prevented the Egyptians from making massive and effective use of their artillery.

It may well be that, during the War of Attrition, the alarm bells rang and the red light went on when the Soviet antiaircraft systems were activated against our planes. We contented ourselves with looking for technical countermeasures and refused to understand that something basic and essential was in the process of changing—that the air force was losing its capability to provide close tactical support in land battles and that this decline in capability had serious implications for our whole concept regarding the structure and organization of our armed forces and for our combat doctrine. We did not realize that Israel's tremendous firepower—greater than that of all the Arab states—would not stand us in

good stead in the tactical land battles of the future and that we could no longer rely mainly on our "flying artillery."

The 1973 October War. For the purpose of this discussion, I shall ignore the political and general strategic considerations underlying the Arab approach and concentrate on the military aspects. The Arabs understood that they were unable to defeat Israel with one military blow. They realized that they were not in a position to achieve their total war aims.

They grasped that, in modern warfare, overall military decisions can be gained only by the conquest of vital strategic objectives in the depths of the enemy's territory and the heart of his state. The Arabs understood (what some Israelis do not want to understand even today) that such remote objectives could be gained only by means of mobile armored formations with the tank as their backbone and this, too, only on condition that the enemy has no freedom of action in the air and that they could overcome the quantitative superiority of Israel's firepower (borne by the air force).

They were confronted by the same problem which faced us in the War of Independence—the quantitative superiority of the enemy's firepower. And, just as we solved the problem in our own way by a combination of ingenuity and a sober assessment of the situation, they solved theirs in their preparations for the 1973 October War. They knew they had



Russian bridge tanks captured in Sinai, 1973 October War

no chance of overcoming us in armored or air confrontations. They came to rational conclusions based on experience. They learned to evaluate the basic factors correctly, to recognize constraints and to plan according to the limitations of their political, economic, social and military power.

While we were sunk in dogmatic hibernation between the Six-Day War and the 1973 October War, the Arabs were preparing an overall war plan tailored to suit their capabilities: a surprise attack on limited military objectives conducted almost as a static war under cover of permanent defense systems and with the

support of static artillery and antiaircraft dispositions.

The Arabs grasped the fact that war is a comprehensive operation and that the military element has a partial function in its overall framework. They realized that they could never gain a total victory over Israel by means of one military blow, both because of Israel's military superiority and because of the international system.

Once having reached this conclusion, the rest followed automatically: If the objective was not a total military defeat, the unity of the Arab world was not a necessary condition for opening hostilities. Inter-Arab cooperation

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was sufficient for their purposes. And, if unity was no longer a prerequisite, there also was no necessity to postpone the war until such unity was achieved. The postponement of the war was rightly perceived by the new rational thinking of the Arabs as very dangerous to them. They understood that "facts were being created" and that the international system was becoming accustomed to the new situation in the Middle East.

War Creates Political Dynamics

The new Arab strategy held it preferable to attain limited military objectives at once rather than strive for total aims in the future. They saw the very outbreak of the war as an objective in itself and a guarantee of obtaining their more general objectives. In other words, the war would set in motion a political dynamic; the powers would be constrained to intervene; international pressure would be brought to bear on Israel; and, in this way, their "self-confidence and self-respect" would be restored.

We, on the other hand, thought it preferable to "create facts" and to "accustom" the Arabs and the international system to the new reality in the Middle East. At the same time, we assumed that the Arabs would not be able to sit and wait indifferently and that there were only two possibilities: either

a political dynamic would be set in motion or the Arabs would be forced to wage war. We relied on the assumption that we were in a position of strength both militarily and politically and assumed, in the event of a war, the Arabs would suffer heavy losses and our bargaining position would not be weakened but strengthened. We came to regard it as axiomatic that, so long as the Arabs acknowledged our operational and strategic superiority in firepower (the air force), they would not dare to attack us.

We forgot the lesson of the Six-Day War. Then, we had assumed that, as long as the Egyptians were involved in the war with Yemen, they would not be able to disengage themselves to wage a war against us. The result was that, in the Six-Day War, we were taken by surprise from the strategic point of view, just as in the 1973 October War. The difference was that, then, the Arabs acted spontaneously and did not attempt to gain a tactical surprise, while we did not take any "calculated risks" but mobilized immediately and, loyal to our defense doctrine, delivered the first blow. This time, we forgot the Six-Day War and sat waiting passively facing the Arab forces, ignoring the inevitable alterations of political dynamics or war.

After the Six-Day War, our defense concept changed. Thanks to the strategic depth we had acquired, we no longer clung to

the principle of the "first blow," and we also believed that we had reached safe harbors and could allow ourselves to conduct a defensive war. All this was correct insofar as the question of our national existence was at stake, but it was wrong with regard to the possibility of Arab success in gaining limited military objectives. We certainly did not intend to allow the Egyptians and Syrians to conquer the Suez Canal or the Golan Heights from us by force of arms.

Thus, our military thinking became paradoxical. On the one hand, there was a feeling of confidence with regard to our general national security due to our strategic depth; on the other hand, the formulation of war aims and operational plans founded on the principle of rigid defense in order to prevent the enemy from obtaining any territorial gains. In this context, our strategic depth was not relevant. Our war aims, in the event of an Arab offensive, were to prevent any territorial gains on the part of the enemy, to destroy his forces and to improve cease-fire lines with an eye to our bargaining power after the war was over.

In the 1973 October War, the intelligence corps and the air force did not live up to the role accorded them in our basic defense doctrine. Although our intelligence succeeded in obtaining the relevant information, they erred in assessing the enemy's intentions and contributed their share to the failure to mobilize the

reserves. According to our defense doctrine, it was their function to give the army time to mobilize and deploy itself. The air force succeeded in covering the mobilization and the deployment of the reserves but did not live up to our expectations with regard to its participation, with the standing ground forces, in containing the enemy offensive until the reserve formations arrived.

The Quality Gap Narrows

In the 1973 October War, the Egyptians and Syrians fought for national and not only for Pan-Arab goals. Accordingly, their motivation was high, and, because of the success of their surprise attack, they were not subjected to the full firepower of our artillery (which was not particularly great in any case since we were relying on our "flying artillery"). Furthermore thanks to their anti-aircraft defenses, they did not feel the full effect of the firepower of our air force either. Their confidence was unshaken and their morale unbroken by the shock which intensive fire usually causes to troops in battle. This time, we did not benefit from the gap in morale and motivation. The motivation of our own troops was extremely high, but the gap between the Arabs and ourselves was smaller than in previous wars.

The second component of our quality is our scientific,

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technological and industrial superiority. Here, too, the gap did not operate as a decisive factor in our favor due to the wealth of the Arabs and their importance on the world scene. The competition was not between the Jewish and the Arab technological genius.

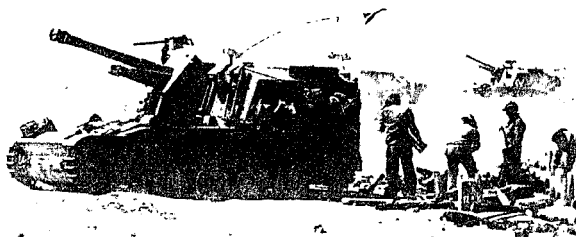
It was from the third component of our qualitative superiority—namely our professional superiority—that we drew the greatest advantage in this war. The Arabs revealed political-strategic superiority regarding planning and preparations for the war and exhibited a very high strategic capability. But, from the minute the first shot was fired, their helplessness in conducting the war at every echelon was exposed. Our forces were revealed in their full superiority as soldier against soldier, tank against tank, plane against plane, ship against ship and commander against commander. Due to historical circumstances, a national pattern of behavior of fighting men has developed among our youth. At every echelon of command, from the lowest to the highest up to the national echelon, Israeli superiority was absolute.

National Goals and Consensus at the Basis of our Defense Concept

In the 1950s, the national purpose was plain, and the national goals dictating the security concept were not in any

doubt: to consolidate the country as a Jewish national state, to reach a modus vivendi with the Arabs and to strive for integration into the region. The transformation of the armistice border into the final borders of peace was the agreed and legitimate goal.

After the Six-Day War, when we were in possession of the "Greater Land of Israel" and there was a tremendous sense of national power, a yearning for the "fulfillment of the destiny of the Jewish people" developed, and practical assessments of the political situation gave way to academic discussions about the borders of the "Greater Land of Israel," strategic security borders, and so forth. There were the various schools of thought—including the great majority of the nation—assuming that we were free to choose, and all we had to do was decide what we wanted. The question of what we were actually capable of doing bothered only a minority. It was, however, clear to everyone that what was also at stake was the essence and image of the state. Did we want a big state with physically secure borders, but with a large Arab population which would of necessity determine the nature of the state as binational? Or should we prefer a Jewish state whose security borders would not be determined by the physical features of the region, but would constitute a dividing line between two cultures and two nations, thereby increasing the physical temptation to attack Israel, but



Israeli artillery in the Sinai, Six-Day War, 1967

also reducing the force of the motivation against it and ensuring that it would remain a Jewish state?

Engrossed in this debate, we did not pay attention to the consequences of the inevitable development in the direction of political dynamics or war. We claimed that we neither needed nor wanted a war in order to advance our aims, but that, if one was forced on us, we would turn it to our advantage, "preventing any territorial gains on the part of the Arabs, destroying as much of their armies as possible and improving our cease-fire lines," thus

teaching them once again that they would not advance their aims by military means.

Furthermore, the improved cease-fire lines would serve as a bargaining counter in our hands, and we would have something to offer in exchange for a settlement. Our self-confidence was a function of the sense of power we had acquired after the overwhelming military victory in the Six-Day War and the feeling of security we derived from the fact that we had finally acquired the longed for strategic depth.

The same controversy which raged among us after the Six-Day

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War with regard to our national goals is on the agenda again today after the 1973 October War. This time, the debate is no longer academic, and it includes not only the question of national aims and objectives, but also the extent of the freedom of choice available to us. This freedom is no longer taken for granted and is open to argument no less than the question of national goals. Until the Six-Day War, Israel's general political war aims were clear, simple, agreed and self-evident. They were related to the simple question of national survival and the protection of the armistice borders. The possibility of territorial improvements was taken into account only as an additional option in the event of the emergence of the appropriate historical circumstances. The defense doctrine formulated in the 1950s and lasting until the Six-Day War derived from these national goals.

From the Six-Day War to the 1973 October War, there was no longer one continuous logic running like a thread through national goals, military and political thinking. Assessments of the military situation, both long and short term, were no longer derived from defined national goals but from conjectures, wishes and hopes. Instead of military strategy being derived from national policy, operational thinking from strategy, and tactics from operational thinking frames of reference became confused and the process was

sometimes reversed. It is a well-known fact that, when strategy is derived from tactics, battles are won and wars are lost. But even worse than the confusion of military and political thinking was the undermining of the national consensus and the emergence of doubts and disagreements about national goals and objectives.

Because of the threat to our existence, there is still a sharp sense of a common destiny among us, but cracks have appeared with regard to the national goals. The nation is divided with regard to the most crucial question of all—what are we sacrificing lives for? This is especially serious because it touches on the most vital component of our strength and the foundation of our military supremacy—motivation and morale.

Strategy and Tactics

The question of national goals is the prime factor influencing both our defense doctrine and our subjective situation. But there is an additional factor which is no less important than the first, and this is the question of our relations with the Arab world and with the international system. The relationship between the two systems should be the same as that between strategy and tactics. Just as tactics should be derived from strategy and not vice versa, so our relations with the powers

should be derived from our relations with the Arabs. The essential and strategic consideration should be Israel-Arab relations, and the tactical consideration should be Israel's relations with the great powers. But it sometimes seems as if the same confusion and reversal of priorities reigns in the political as in the military sphere.

Besides this essential problem, there are other basic military strategic factors which we shall attempt to analyze below:

- *The Relationship Between Force and Space.* In the ratio of quantitative forces, it is customary to compare the relative size of the opposing forces. But this quantitative comparison is more complex than it might at first appear since, at the strategic level, not only the quantitative relation between the forces has to be taken into account, but also the relation between the size of the force and space.

Classical military doctrine establishes a quantitative ratio of forces of 3 to 1 in favor of the attacker, other things being equal—that is, when the morale (in the broadest sense of the term) and the quality of means of warfare are equal. These classic military principles are correct, in my opinion, only at the tactical and operational levels but not always at the strategic level. Here, the ratio of force to space (territory and length of borders) also must be taken into account.

Under present conditions in our theater, in the light of the

saturation of space by enemy forces, it is the defender who must enjoy quantitative superiority at the national-strategic level and not the attacker because the defender's forces have to be dispersed and spread out over the entire theater, whereas the attacker can concentrate main efforts and apply center of gravity doctrine.

An army with a large force at its disposal will adopt the method of "center of gravity" and not the method of "main effort," which is the method of the few. The method of "main effort" demands a prior decision as to where to concentrate the resources and main effort in overcoming the enemy and gaining decision. The "center of gravity" method can be applied where a large force and many resources are available and it is possible to attack on all fronts simultaneously, launching the reserves to wherever success is achieved. In the conditions of our theater today, a defensive war is a luxury which only the side enjoying quantitative superiority can afford. The side which does not enjoy quantitative superiority cannot permit itself this luxury. This leads us to the simple conclusion: The "few" must adopt the principle of delivering the "first blow" and conducting an offensive rather than a defensive war.

With the quantitative ratio of forces as it is at present—"few" against "many" and saturation of space by enemy forces—only an offensive promises decision. If due

ISRAEL'S DEFENSE DOCTRINE

to political or other constraints this method proves impractical, then the only alternative, the least of all possible evils, is a "flexible defense"—in other words, fighting to destroy enemy forces even at the expense of loss of territory. We cannot afford to take the risk of conducting a "rigid defense"—that is, fighting to hold territory at any price. The conditions for conducting a flexible defense do not, however, exist in all our theaters so that situations may arise where we will have no alternative but to take the offensive. Conducting a defensive war, even if we succeed in containing the enemy, does not ensure final victory because the Arabs can hold out longer than we can and we will run out of our materiel and spiritual resources before they do.

• *The Nature of the Force.* The above has implications for the doctrine of the structure and organization of our armed forces. We must emphasize the need to build a large land army, with a clear preference for the mobile armored formation which is the only one capable of carrying the offensive into the depth of the enemy's territory, threatening his vital strategic objectives and the survival of his armies, and thereby compelling him to end the war. The tank is the core and backbone of the armored formation. The formation consists of all arms, all of them mobile and some of them armored. The tank bears the brunt of the assault and is the decisive weapon of land warfare. All other arms are in-

tegrated in the formation to support the tank and serve it by dismounted fighting, providing protection, breaching obstacles and providing fire and logistic support.

Among the myths that were born in the aftermath of the 1973 October War was the slogan: "The infantry has come into its own again as queen of the battle." This is, of course, absolute nonsense, both from the point of view of what actually happened in the last war and from the point of view of the theory of the modern battlefield.

The enemy maintains regular forces posted all along our borders. He does not need time to mobilize and has less reason to fear a surprise attack than we do. He has additional sources of manpower in reserve, whereas we exploit our forces to the full—we have nothing in reserve. In the final analysis, the Arab regular armies constitute a standing war machine, whereas our civilian army constitutes a potential war machine. The source of the militia army's weakness is that the more modern warfare becomes, and the more sophisticated the means of warfare become, the higher the level of specialization demanded of a fighting nation—from the individual fighter of the assault echelons to the last of the men engaged in the war effort in the rear. Specialization is a function of application, of time, of continuous and concentrated devotion to each of the subjects of warfare. A militia army is in a

sense the antithesis of specialization.

The situation is that while on the one hand all the constraints and considerations which obliged us in the 1950s to found our security on a militia army still exist, on the other hand the conditions have changed beyond recognition—military science and technology today demand an extremely high level of specialization, and the difference is one of essence and not one of degree. The IDF is a citizen army faced with the task of waging real wars, and its soldiers are faced with the task of maintaining a war machine in the era of sophisticated modern weapons systems without sufficient and comprehensive specialization.

But there are advantages as well as disadvantages to this situation. In the materiel sphere, a regular army will always be superior to a militia army, but, as far as morale is concerned, the militia has the advantage—war, like many other spheres of human endeavor is composed of both materiel and spiritual elements. Mobility, for example, is from the materiel point of view a function of the quality of the equipment, but, from the spiritual point of view, it is a function of motivation, initiative, daring, flexible thinking and improvisation—it is a state of mind. A citizen army enjoys a further advantage over a regular army because everyone serves in the reserves. All the strata of society and all the qualities latent

in the nation are expressed at every echelon.

Conclusion

The two basic forces on which our fighting doctrine must be built are the air force and the mobile armored formations. The air force must ensure our freedom of action with regard to mobilization and deployment of the reserve army by covering it and the vital strategic objectives of the state against the air forces of the enemy. Its role also is to act as the strategic long-range arm of the country so as to inflict strategic blows on military and economic infrastructure in enemy countries and on military objectives in the operational combat areas.

The mobile armored formations act as the decisive operational and strategic force on land which means that the tank in the IDF is not a supporting weapon but a decisive tactical and operational weapon. Even if it were possible for infantry formations to perform the tasks of armored forces, our manpower would not be sufficient for the purpose. A small nation cannot build up many infantry formations. Only nations with huge populations can flood the battlefield with masses of infantry. In our circumstances, it is possible to end wars quickly by deep penetration of enemy territory only by means of mobile armored formations, as was proved in the 1973 October War. ■

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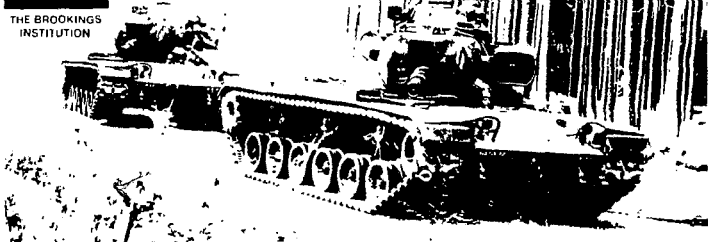
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The Military Balance in Europe



Frederick W. Young

UNLIKE strategic forces, US and Soviet conventional (or general purpose) forces do not threaten each other's territory directly. Instead, these forces are arrayed against each other in third areas where trends in the balance of US and Soviet conventional military capabilities are believed to have a significant impact on the course of world events. One such important area is Europe.

The importance of Europe to the security and economic and political well-being of the United States has been discussed at length in various publications. US Armed Forces play three roles in protecting these interests:

- By balancing Soviet power and deterring Soviet adventures, US forces in Europe have permitted political rapprochement between

East and West to develop and continue.

- By making credible US guarantees for the security of Western Europe, US forces have helped avoid West German perception of a need to develop nuclear weapons, thus also facilitating East-West rapprochement and greater cooperation among the nations of Western Europe.

US forces in Europe have strengthened the close economic and political cooperation that now characterizes relations between the United States and Western Europe.

Most public comment on the military situation in Europe emphasizes a decade-long buildup in Warsaw Pact forces. Yet focusing solely on Pact capabilities ignores the substantial efforts of NATO

Taken from The Brookings Institution Studies in Defense Policy, *The Soviet Military Buildup and US Defense Spending*. Copyright © 1977 by The Brookings Institution, Washington, D. C.

The Balance of Forces in Northern and Central Europe,
1970 and 1976

Component	NATO			Warsaw Pact		
	1970	1976	Change (Percent)	1970	1976	Change (Percent)
Combat and direct and support troops (thousands)	580	635	9	900	910	1
Tanks (number deployed with units)	5,500	7,000	27	14,000	19,000	35
Tactical aircraft	2,200	2,100	-5	3,940	4,200	6
Tactical nuclear warheads*	7,000	7,000	0	3,500	3,500	0

*Warsaw Pact figures have not been verified in official sources

Source: *The Military Balance 1970-1971* and *The Military Balance 1976-1977* The International Institute for Strategic Studies, London Eng 1970 and 1976

Table 1

nations to improve their own military capabilities NATO's military position vis-à-vis the Warsaw Pact clearly weakened during the late 1960s when the Soviet Union substantially increased its conventional forces in Eastern Europe But, since about 1970, both sides have been expanding and modernizing their forces at comparable rates As a result, gross comparisons of force levels, like the one in Table 1, show little significant change in the balance of forces so far in the 1970s.

Changes in the balance of forces resulting from the modernization of weapon systems are more difficult to assess, yet, in side-by-side comparisons of similar weapons' technology, NATO appears to have done rather well

First, the modernization of Warsaw Pact air forces has been substantially matched by NATO

While the Warsaw Pact has acquired more new combat aircraft in the last few years, the aircraft acquired by NATO can carry a larger total payload Other improvements, such as those in avionics and precision-guided ordnance, also have favored NATO

Second, both sides have been modernizing their armored forces. The Soviet Union has produced about 17,000 tanks since 1970, including 2,000 of the new T72 design NATO has acquired about 4,000 new tanks during this period—mostly the US M60 and the West German *Leopard 1*, both of which appear to be as capable as the T72. The Warsaw Pact, which traditionally has emphasized armor, continues to have about three times the tank inventory of NATO, but NATO has made impressive strides in closing the gap in tank production rates—the ratio by which NATO is

MILITARY BALANCE

outproduced, having been cut from about 4 to 1 to about 2 to 1

Third, increases in antitank capabilities seem roughly balanced. NATO's antitank guided missiles are considerably easier to operate and have shorter flight times than those deployed by the Warsaw Pact. Shorter flight times are a significant advantage because they increase the probability that the antitank gunner will be able to guide the missile to its target before the target disappears from his view and because they reduce the amount of time the gunner must remain exposed to enemy observation and fire. On the other hand, Pact antitank gunners enjoy greater protection from artillery and small arms fire because their weapons are more often designed to be operated from inside armored vehicles.

Fourth, improvements in air defense capabilities also appear roughly balanced. Since 1970, the Soviet Union has introduced four mobile air defense missile systems which, along with continued procurement of previously introduced items such as the *ZSU23-4* air defense gun, have greatly increased the protection offered by Pact air defenses to combat units on the front lines. This specific effort has not been matched by NATO. However, with NATO's deployment of very capable fighter aircraft such as the *F15*, its air combat capabilities have increased more than those of the Warsaw Pact.

Fifth, both sides have deployed roughly comparable tank-destroying helicopters.

Sixth, the Soviet Union has doubled the number of artillery tubes with its forces; NATO has increased its artillery capabilities by developing substantially more effective artillery munitions.

The list could go on, but it seems evident—within the limits of uncertainties surrounding any such assessments—that the modernization of Warsaw Pact forces has been effectively matched by NATO improvements. Even if one accepts this conclusion, however, a question remains. Have the characteristics of these new weapons changed the nature of warfare in a way that would favor one side or the other? Two hypotheses seem to have gained wide acceptance:

- New weapons have increased the rates at which materiel would be destroyed and consumed in battle.

- The expected ratio of combat losses has shifted in favor of defensive ground forces at the expense of attacking ground and air forces.

In Europe, the second hypothesis favors NATO which, despite the necessity for counterattacks, is likely to be on the defensive more than the Warsaw Pact. The first hypothesis, however, favors Warsaw Pact efforts to achieve a quick victory before NATO reinforcements could be mobilized. Combined with longstanding concern about a mismatch between the Soviet emphasis on short wars and NATO preparations for more protracted conflicts, this presumption that battle in Europe

would result in heavy losses and the rapid consumption of materiel has contributed to current misgivings about the adequacy of NATO's defenses should it fall victim to a surprise attack.

In effect, the current balance of forces is such that neither side could be guaranteed a favorable outcome should war break out in Europe. Assuming that the Warsaw Pact would begin to mobilize for war before NATO did, its greatest military advantage would exist in the first few days of a crisis. Thereafter, if an uninterrupted buildup of forces were to continue on both sides, the ratio of opposing combat forces available in Europe would continue to shift in NATO's favor unless the Soviet Union were willing to move large numbers of troops from its Central, Southern and Far Eastern military districts—an unlikely development in view of the threat from China. In the very long term, the ratio would probably continue to shift in NATO's favor because of its far larger population and economic base and consequently greater potential for raising and supporting military forces.

Because of these disadvantages, the most attractive strategy for the Warsaw Pact would be an attempt to achieve victory in the shortest possible time—not surprisingly, the very strategy advocated by Soviet military doctrine. The chances of success in such an effort would obviously be greatly enhanced if the Warsaw Pact were able to achieve strategic and tactical surprise.

The Warsaw Pact could initiate a surprise attack on Western Europe

with either nuclear or conventional weapons. If the USSR were willing to use nuclear weapons, its forces clearly would have the capability of destroying most of NATO's military resources in nearly simultaneous attacks. Warsaw Pact ground forces would then be able to occupy what was left of Western Europe without facing major opposition. However, since the uncertainties involved in any nuclear war—particularly the risk that the West's response would be to destroy Soviet cities—are great, a surprise nuclear attack would seem to be an attractive military option for the Soviet Union only if it should believe that war was necessary and that a conventional attack would inevitably escalate to large-scale nuclear warfare.

A more likely possibility would be a surprise attack with conventional forces. If all Pact forces in Eastern Europe were to attack at full strength without warning, existing NATO forces would doubtless be faced with the unfortunate choice of yielding substantial territory or using nuclear weapons. Moreover, the cost of providing conventional capabilities sufficient to stop such an attack would be considerably more than NATO is now willing to spend. But such fears rest on pessimistic assumptions. In reality, the Soviet Union would face severe problems in orchestrating a surprise attack—problems of sufficient magnitude to place an effective conventional defense well within NATO's reach.

It is unrealistic to assume that the ground forces of the Warsaw

MILITARY BALANCE

Pact could launch a major attack without any warning. For one thing, Eastern European army units are manned in peacetime at less than 75-percent full strength. For another, the normal peacetime activities of Soviet ground forces in Eastern Europe, which are believed to be almost fully manned, include training and maintenance activities that, at most times, would inhibit their immediate availability. Finally, supplies that would be consumed relatively quickly in combat, particularly ammunition and fuel, would have to be distributed to combat units before an attack. In short, Soviet preparations for an attack would probably take at least a few days, and Eastern European preparations somewhat longer. These efforts would be noticed by the West almost immediately.

The frequently cited danger that NATO would receive this strategic warning but be unable to react because of political indecision seems exaggerated. There is no doubt that a political decision for NATO to mobilize could take some time—perhaps days. But military commanders of active units have the authority to cancel training and begin preparation for war before that. For example, such steps as loading vehicles, conducting last-minute maintenance and updating and reviewing operational plans should allow NATO ground forces to begin to move almost immediately after a political decision is reached. Since armored or mechanized forces can travel more than 200 kilometers a day if unopposed, well-prepared forces located as far away

as the Benelux countries would have a good chance of reaching defensive positions near the East German border within 48 hours of a political decision to mobilize.

The danger of a surprise attack by Warsaw Pact air forces also seems exaggerated. To be sure, aircraft based in Eastern Europe could reach targets in Western Europe after flights of only 15 to 20 minutes. However, a large-scale air attack could not be conducted without preparations, and would not be conducted before the initiation of preparations for the ground attack. Thus, again without need for a political decision to mobilize, NATO military commanders should have time to shelter aircraft, and possibly to disperse some to auxiliary airfields, as well as to place air defenses on alert.

Another possible indicator of an impending Soviet attack would be the activity of Soviet naval forces. Most of the time, a preponderant fraction of the Soviet Navy is located in the Barents, Baltic and Black Seas where ships would be of little use for a conflict in Western Europe and where they would be fairly vulnerable to NATO operations to restrict their movements. Accordingly, the Soviet Union would be taking a sizable risk by initiating an attack in Central Europe without first moving much of its navy into the Mediterranean and the Atlantic. Such a step would require several days to accomplish and would provide NATO with another warning signal.

There would be dangers to NATO even if strategic warning were

available. The Soviet Union might decide to build up its forces in Eastern Europe for weeks or even months before initiating an attack. Soviet leaders might decide that stocks pre-positioned near the front lines were too small, that Eastern European forces were too unreliable or that lines of communication were too vulnerable to guarantee an adequate supply of forces and materiel after the initiation of hostilities. Indeed, despite the military advantages of surprise, the USSR might decide that an overt mobilization effort could provide a show of force sufficient to bring about the favorable settlement of a crisis without war. Even with warning, the longer NATO waited to mobilize, the worse its military situation would become. And the fact that NATO's military position would begin to improve as soon as it took steps to mobilize could, in itself, provide an incentive for the Warsaw Pact to attack as soon after NATO mobilized as possible. Ironically, this realization might make it difficult for NATO political leaders, hopeful of a peaceful settlement, to decide to mobilize for war.

In summary, the Soviet Union and its allies in the Warsaw Pact could threaten NATO militarily in a number of ways, all of which are unlikely but none of which can be ignored. Present NATO conventional forces would have a good chance of conducting a forward conventional defense if an attack occurred after some period of tension and mobilization on both sides or if the Soviet Union received less than full cooperation from its Eastern Eu-

ropean allies. There is room for worry, however, about NATO's capability if all Warsaw Pact forces were committed on short warning or if NATO were slow to mobilize. In these cases, the Warsaw Pact would have a fair, though far from certain, chance of forcing NATO to choose between the first use of nuclear weapons and a large loss of territory. For these reasons, NATO's first priority should be to increase the conventional capabilities of immediately available and readily mobilizable forces.

Five of the proposals in the 1978 budget for strengthening US military forces for Europe are discussed below.

● *Redeployment of an Army Brigade From Southern Germany to the North German Plain.* The best route of advance for a Warsaw Pact armored thrust into Western Germany is through the northern plain. The more mountainous terrain to the south inhibits the mobility of attacking armor and provides better defensive positions for NATO forces. Moreover, NATO forces in southern Germany, which include all US forces, all French forces and two of four German corps, are stronger and better equipped than those in the north. Thus, shifting a US brigade to the north seems a step in the right direction in that it strengthens the weakest link in NATO's capability to conduct a forward conventional defense on the ground.

● *Conversion of Two Active Army Infantry Divisions and One Reserve Brigade to Mechanized Forces.* Present Department of

Cost of Proposals for Airlift Improvement

Proposal	10-year Cost (Millions of 1976 Dollars)	Increase in 30-Day Capability (Thousands of Tons)	Cost Per Ton of Increased Capability (Dollars)
Increased utilization rates of C5A and C141 aircraft	1,057	32.5	32,000
Modification of C141 aircraft	550	19.6	28,000
Modification of commercial aircraft	550	91.0	6,000
Total or average	2,157	143.1	15,000*

*Average

Source: Comptroller General of the United States. Information on the Requirement for Strategic Airlift. General Accounting Office Report B-162578. 8 June 1976. p. 7.

Table 2

Defense plans to convert infantry forces stationed in the United States to mechanized units are also sound. Although mechanized divisions are more expensive than infantry, their greater capability in the European military environment more than justifies the additional cost. Even the USSR, which by US standards pays a pittance for manpower and a premium for equipment, has chosen to field armored and mechanized forces to the virtual exclusion of infantry.

● *Increase in Stocks of Pre-Positioned Equipment.* A mechanized division can be moved to Europe just as quickly as an infantry division only if its equipment is pre-positioned on the Continent. Thus, providing equipment stocks in Europe for additional mechanized divisions is an essential element of plans to strengthen NATO's combat

capability in the critical initial stages of conflict. This does not require the procurement of additional sets of equipment. For many items, the US Army already plans to buy enough war reserve stocks to provide additional equipment sets for several more divisions. Units based in the United States could train with these war reserve stocks while their own equipment was stored in Europe. Another way to increase pre-positioned stocks without increasing procurement would be to have reserve units share equipment for training.

● *Increase in Strategic Airlift Capabilities.* The airlift improvement program proposed by the Department of Defense would increase US ability to reinforce forces in Europe in the critical first few weeks following mobilization (Table 2). Sealift, though capable of providing many times the capacity

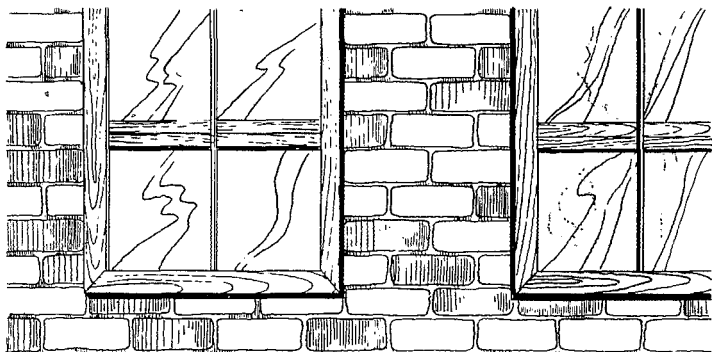
of even the improved airlift after three or four weeks of mobilization, simply could not respond during the critical initial period. Pre-positioning equipment in Europe would be another, and in some respects still better, way of accomplishing the same purpose.

The airlift improvement program would increase the amount of materiel that could be shipped from the United States to Europe by air in the first 30 days from about 180,000 tons to about 320,000 tons, for a 10-year cost in excess of \$2 billion. The 143,000-ton increase in capability is roughly equivalent to the weight of the unit equipment of three mechanized infantry divisions. The cost of the program is just about what it would cost to buy the same equipment and store and maintain it in Europe for 10 years. Thus, if equipment for mechanized forces is representative cargo and if the amount of materiel available in Europe 30 days after mobilization is the proper measure of merit, buying and storing additional materiel in Europe is about as attractive as the airlift improvement program. Pre-positioning would clearly be the better alternative if it could be accomplished without buying additional equipment, but improved airlift might be necessary to protect US interests in other regions such as the Middle East. The proposed program should, therefore, not be judged strictly on the basis of needs for war in Europe.

In any case, certain portions of the airlift program are decidedly worse than others. As shown in Table 2, the proposals to increase

the utilization rates of C54 and C141 military transports and to modify C141s are about five times as expensive per ton of increased capability as the proposal to modify commercial aircraft. About 60 percent of the proposed increased capability could be obtained for about 25 percent of the total cost if the modification of commercial aircraft were retained and the other proposals were dropped.

● *Hardening of Air Base Facilities in Europe* The most significant element of the proposal to harden air base facilities in Europe is a plan to construct about 250 aircraft shelters from Fiscal Year 1978 to Fiscal Year 1983. The proposed program would increase the number of US shelters in Europe to about 950, enough to accommodate about half the number of aircraft the United States might reasonably expect to operate in the European theater at any one time. Shelters greatly reduce the vulnerability of aircraft on the ground to air attack and also provide relatively safe places to perform aircraft maintenance. Each shelter normally holds one aircraft which may have cost as much as \$12 million. The estimated cost of each shelter, on the other hand, is about \$0.8 million. Thus, until there are sufficient shelters for all expensive combat aircraft, building new shelters would appear to be well worth their cost. This would change if the Soviet Union developed and deployed weapon systems capable of finding and destroying shelters efficiently, that, however, appears unlikely. 

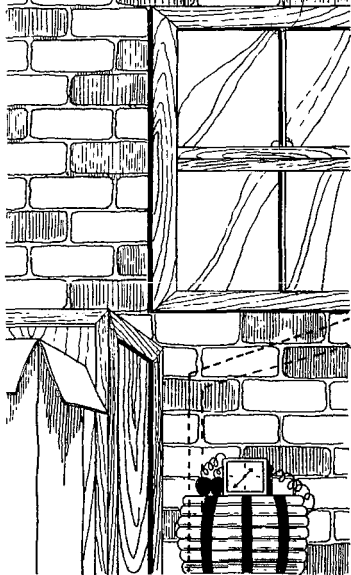


Colonel Norman L. Dodd,
British Army, Retired

FOR more than seven years, the cry "Send for Felix!" has been heard only too often in the troubled Province of Ulster. It requests the immediate presence of an ammunition expert of the Royal Army Ordnance Corps (RAOC) qualified to deal with terrorist improvised explosive devices or IEDs as they are known in the trade.

Responsibility for dealing with mines, booby traps and unexploded bombs in the field lies with the Royal Engineers. The Royal Air Force deals with bombs on their own airfields, and the Royal Navy with mines in the sea and on the beaches, but the ammunition technical officers (ATOs) and ammunition technicians (ATs) of the RAOC are charged with the dangerous task of rendering safe or destroying IEDs. They have been doing this with increasing success since World War II in Aden, Cyprus, Hong Kong, Malaysia,

**Send for
Felix!**



Belize and now in Ulster. Their employment in this work is logical because, in peacetime, one of the objects of the security forces is to bring the bombers to the courts of law. Vital fingerprint and forensic evidence can be obtained from the ingredients of an IED which would be lost if the device is simply exploded. Further, the average cost of damage done by bombs in a builtup area such as Belfast is £1,000 per pound of explosive. Bombs average 35 pounds in weight so that each one successfully dismantled can save the country £35,000.

In the last year, the disposal teams had success with 98 percent of all the IEDs which they reached in time and 95 percent of all those actually put down by terrorists. In a four months' tour in the province, a disposal expert can expect to be called to 150 incidents, of which about 50 will be hoaxes, but he will not know they are hoaxes until the device has been dismantled. There are likely to be 50 false alarms and 50 live bombs. It is a testing and dangerous assignment and one which requires steady nerves and thorough training.

In the RAOC, budding "Felixes"—named after Felix the cat with his nine lives—first carry out their normal RAOC training. Then, after a period with a unit, they are selected to attend a 15-month course where they are given a grounding in all land service ammunition and guided weapons, electric circuitry, explosive bursting ballistics, am-

munition design and explosives. They also are given a basic understanding of terrorist devices used worldwide and the general countermeasures employed.

ATOs then are employed on general ammunition duties for three years before returning for a time to normal RAOC duties. They may be employed on "bomb disposal," but, before doing so, they must attend an extremely thorough IED course and prove themselves capable in every way of dealing with these devices. During this course, they, and the ATs employed on this work, undergo a series of psychometric tests to help ensure that they have no weakness in their makeup which might crack under the strain of these operations. While not claimed to be 100-percent successful, these tests undoubtedly have saved some lives and are considered a valuable aid to the selection procedure.

ATs, unlike the ATOs, spend all their career in ammunition and similar duties but are not employed on IED duties until they are sergeants, which usually means they have had four years' service. They are given the special course and, like the ATOs, only spend four months at a time on these special duties in Ulster. Elsewhere, the tours are longer, but, because these officers and noncommissioned officers may get out of practice, they are given refresher courses from time to time.

The identities of the IED specialists are kept as secret as is

reasonably possible because they are obvious targets for the terrorist murder squads. The British television and press have always cooperated by not photographing them "full face" during their many operations in the streets and countryside of Northern Ireland. However, they do become identified as do their method of operation. It is important that each operator varies his systems and routes, and he must never use the same trick twice. Recently, one ATO successfully dismantled nine identical IEDs in a morning, all with a circuit fault in them. The 10th, he fortunately tackled in a different manner. It had no circuit fault. The first nine were only come-ons. Another operator took four bombs out of gasoline tankers. It seemed too easy, so, for the fifth, he made a different approach. The device had an extremely tricky anti-handling system built in.

Part of the IED training is to invent and try out a device. Most trainees produce the most highly efficient but overcomplicated contraptions. An experienced bomb disposal officer explained that most terrorist devices are fairly simple. They have to be because of the short time normally available to a terrorist to emplace them and set the fuze.

Few bomb makers plant their own bombs. This is done by the assistants who are usually not skilled enough to prime a complicated device. Some bomb builders in Ireland are not too clever because at least 117 are

known to have blown themselves up! However, simplicity cannot be relied upon, and it has to be assumed that every device is complicated until it is proved not to be.

The majority of IEDs have a simple clock or clockwork timing device, usually an alarm clock or kitchen timer. Some light-sensitive devices are found; others are radio or command wire-controlled. Trip wires are quite common in rural areas, and there are acoustic, infrared and chemical arrangements about.

Terrorism is an international phenomena. Libya seems to act as "the host nation" for terrorists and hosts a training school to teach them the tricks of the trade. Plenty of literature on the manufacture of IEDs is available. Until recently, a book entitled *The Anarchist Cook Book* published in the United States was freely available on bookstalls in some Western countries. It gave recipes for making IEDs, bombs and booby traps.

A large number of terrorists, especially in Northern Ireland, have had military experience and are adept in the rural areas of placing booby-trapped arms and IEDs in derelict and outlying buildings and then getting someone to telephone the security forces that "something suspicious is going on" at the site.

The RAOC Felixes are taught to take the IEDs apart but prefer to have well-trained Royal Engineer search teams and explosive "sniffer" dogs plus in-

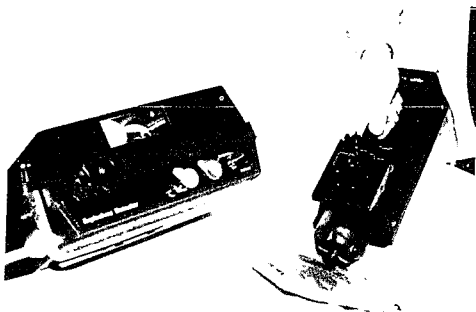


An area in Belfast
after car bomb explosion



Milk churn mine

A portable explosive
sniffer detector



SEND FOR FELIX!

fantry protection with them in such situations. These search-and-dismantle (or destroy) operations can take two or three days and involve a large number of people. This ties down valuable experts while the bombers operate elsewhere.

The best way of dismantling an IED is still the expert using his hands and his knowledge, but, with a short time warning, it is suicidal for him to approach too close to the suspected object. The death of a trained bomb disposal man is not only a severe loss to the nation, but also a boost to the terrorist's morale. Too often in the early days in Ulster, Felix had to wait impotently until the bomb exploded or failed to go off. To regain the offensive, it was necessary to attack by remote control. It was decided that a 100-meter range was reasonable, and, on 1 March 1972, a requirement for a remote vehicle was formulated; by 31 March, the first prototype of the now renowned *Wheelbarrow* was produced. It was crude but effective, comprising a four-wheeled, electrically propelled trolley, remote-controlled and fitted with an arm to accept various tools and equipments. The *Wheelbarrows* used by the British forces are made by Morfax and today are fairly sophisticated affairs able to carry and operate a large variety of equipment ranging from television cameras, films, disrupters, shotguns, infrared scanners and simple grapnels and hooks.

The weaponry used has improved beyond all recognition. Much research has been carried out into the art of disruption; in IED disposal terms, this means disrupting the device so rapidly that the detonator is unable to operate. An electrical detonator works at a speed of about five milliseconds. The research and development scientists were able to produce a family of disrupters which would work within this time scale. These include a water delivery system, in which, basically, a jet of water is driven at extremely high speed into the device, and a metal "punch" in which a plunger is forced through the device. The latter goes at such a velocity that it can be forced right through the trunk of an automobile disrupting any device as it passes through.

To assist in the detection and examination of IEDs and explosives, X-ray equipment, explosive "sniffers," especially constructed stethoscopes and metal detectors are used.

X-ray equipment is available which can provide visual identification of the contents of parcels and letter bombs and will disclose concealed weapons and booby traps. The Sas Group of Companies produces one which is portable and is battery-powered. It weighs 8½ kilograms and has an exposure control allowing a rate of about 20 pulses per second. It is supplied with remote control and is available with equipment to produce 10 × 13-centimeter positive radiographs on Polaroid film.

The equipment is adaptable to use a fluoroscopic screen. Another item on the market is a thin, image-storage panel which can be slipped behind a suspected IED; this gives instant results and a clearer and larger picture than is obtained from the Polaroid camera. The image will begin to fade after 30 minutes but will remain visible for 36 hours if cold-stored.

There are many explosive detectors available. These normally contain a small radioactive source, an ionization chamber and argon gas. The smallest trace of vapor of an explosive will cause a minute electric current which will activate various forms of warning, audible or by instrument. The equipment can be quite small, the probe head being handheld or fitted to the arm of the remote-controlled *Wheelbarrow*. Sniffers also come on four legs. Experience has shown that a well-trained dog, normally a Labrador, has an uncanny aptitude to find hidden explosives and weapons—a quick way of checking houses for hidden arms and explosives without causing a lot of damage.

Stethoscopes are used to facilitate the detection of active clockwork-type fuze mechanisms. One operates at all normal temperatures and consists of headphones; a control unit which is only 26 centimeters long; a small battery pack; two sensors, one being acoustic and the other seismic; and three different attachment assemblies. The in-

strument can be operated remotely and is sensitive enough to detect a so-called "silent" clock in a parcel.

Once the IED has been identified, it is Felix who must decide whether to disrupt it, dismantle it or let it explode while doing everything possible in the time available to reduce the effects of the blast. Often, it is possible to blow the circuitry out with a shotgun or pull the device apart by using a hook and line. Philip and Allan make such a system with a full range of pulleys, clips, lights and inspection mirrors. Many bombs have been neutralized successfully by pulling them to pieces on the sidewalk.

A number of improvements have been made in the muffling of explosions. Bomb blankets widely used in the United States are effective, but, once placed over the IED, it is dangerous to remove them. The bomb disposal expert is in a serious quandary if the device does not explode, for to move the blanket may set off the detonator. Bomb containers also are used. The bomb is placed in the container and transported to a safe place. The use of containers depends upon the possibility of placing the bomb in the container without setting it off. The same problem of disposal arises if the device does not go off. There have been some promising advances made in the use of foams. Certain mixtures sprayed onto a device will reduce the blast effect by a factor of 4 to 1; a 20-pound bomb's

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effects can be reduced to those of a 5-pound bomb. The problem is that, to achieve the maximum effect, the foam must be wet, and to stack wet foam over a device is very difficult. Foams used have been based upon industrial detergents, and they have been found useful in enclosed spaces. Foam has a lot to offer, and experiments continue in this field.

Cryogenics, freezing, also provides excellent possibilities. A battery does not work effectively at very low temperatures. Therefore, if an agent like liquid nitrogen is sprayed over the IED, the battery can be frozen and the detonator will not operate. The problem is one of logistics; it takes 40 kilograms of liquid oxygen to freeze a battery in 20 minutes. Even reasonable insulation will increase this time and the amount of agent required. However, small aerosol sprays can be used to freeze cells in letter bombs.

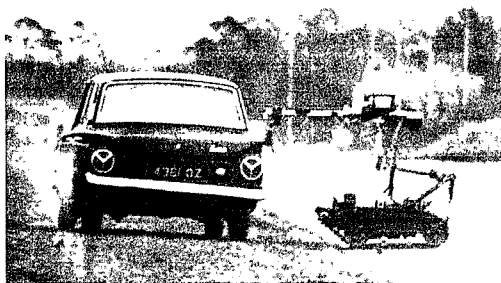
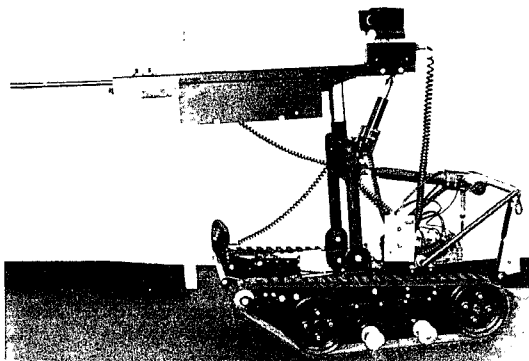
Chemical neutralizing agents also are being examined. It should be possible to inject certain chemicals into nitroglycerine explosives in order to render them inoperative. Theoretically, it is possible to use laser beams to disrupt the bomb mechanism, and radio-controlled or infrared detonators can be disrupted by a very high power beam which would burn out the circuitry. Unfortunately, such a beam also would burn out all the televisions and radios in the area. Frequencies used by a terrorist bomber in sophisticated radio-controlled devices are, of

necessity, limited to little used ones. They, therefore, could be located and jammed.

Most of the explosives used in IEDs are obtained from commercial sources or stolen from warehouses, stores, factories or quarries. Control of explosives must be rigid and supervised by the police. Every item issued in a quarry must be accounted for and proved to have been used. However, it is not difficult to manufacture explosives from goods purchased freely in shops. Ammonium nitrate obtained from many garden fertilizers mixed with fuel oil will produce an explosive. Others are based upon sodium chlorate which, mixed with sugar, will make an incendiary bomb and, if nitrobenzene is added, it becomes a lethal explosive. IEDs recently used to start fires in stores have been tape cassettes loaded with sodium chlorate and sugar with a gas lighter cartridge as a detonator and a wrist watch as a timer. Fortunately, many of these homemade explosives and devices are unstable and dangerous to the bomb makers—hence, the numbers of people killed and maimed in Ulster by their own productions.

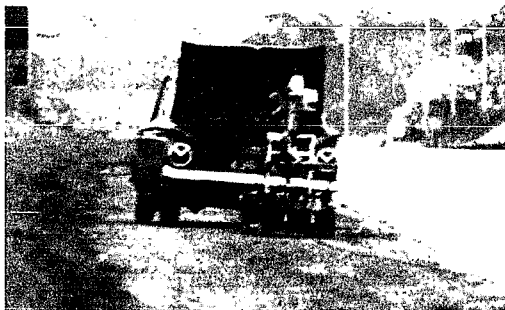
No form of personal protection can guarantee the safety of the bomb disposal expert, but a good suit can go a long way toward protecting him from flying debris, heat and some of the blast. The British are world leaders in the production of protective suits. The one presently in use is the GS80

The Wheelbarrow out-fitted with shotgun and television camera



The Wheelbarrow opening a car trunk

Photos courtesy of author



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explosive ordnance disposal (EOD) suit and helmet. It consists of a jacket made from more than 15 layers of special ballistic, flame-retardant material. There are additional chest and abdominal plates to give protection to the vital organs, and the chest plate incorporates a face/neck blast deflector. The trousers provide front and side protection and have braces in the legs; the trousers also have "spats" for foot protection. There is a back protective apron which can be attached by Velcro fastenings. The suit allows flexibility of movement, and there are plenty of pockets for EOD tools. The helmet is made of a ballistic polycarbonate with a movable armored visor, integral headphones or earmuffs held firmly in place by a chin strap. The total weight is 18 to 20 kilograms, and there have been cases where a 200-pound device has gone off 25 meters from the wearer and he has come away unhurt. He was lucky; such protection is not expected from the suit.

Bomb shields also must be mentioned. They are used in the United States and Canada and, on occasion, by the British forces, but they are cumbersome and do not permit much freedom for Felix to work on the device.

One of the principal problems which the bomb disposal teams meet is that of getting to the device in time. For this reason, good communications to the team's location are essential, and the team must have its own

specially equipped vehicle. This must be small enough to move rapidly through the traffic and get out of trouble quickly, yet large enough to carry all necessary equipment. There is no time to go back for something forgotten. In Northern Ireland, the vehicles must be bulletproof because they can be targets for gunmen. The RAOC have found that the 3-liter-engined, 15-hundredweight Ford transit vans, modified and armored with glass-reinforced plastic, are most suitable. The vehicle carries the bomb disposal expert, the driver and a two-man infantry escort plus a *Wheelbarrow* and other equipment. Felix himself has a short-range radio of the walkie-talkie type, and there is a longer range set in the vehicle to work back to the EOD unit headquarters where the commanding officer (known as Top Cat) is located.

While Felix is working on a device, the assistant can watch operations on the closed-circuit television screen, and, at the same time, the expert should be broadcasting what he is doing. In practice, this has been found to be easier said than done; often all that the listeners hear is deep breathing while he works on the device.

In the same way as terrorism is international, so, too, are antiterrorist operations. After seven years in Ulster, it is accepted that the British have developed an expertise which is of considerable benefit to other countries. Regular

seminars and study groups are held, and experiences are exchanged between operators. There is no "closed shop" in the development of antiterrorist equipment or of methods employed to "frustrate their devilish tricks." If the ascendancy is to be maintained, it is necessary to be at least one jump ahead of the bomber at all times.

Bomb disposal is a dangerous cat-and-mouse game, and the stakes are high not only in cash but, more importantly, in peoples' lives. Since 1961, 16 RAOC IED experts have been killed while attempting to make safe these devices. Five more have suffered minor injuries. Experience shows that Felix is either killed outright or comes away unscathed. There is usually no in-between for these very brave men.

In spite of increasing security precautions and a wider

awareness of the bombers' activities, there seems to be no decrease in terrorist activity throughout the world. So long as people are unable to settle their differences without violence, the placing of IEDs will continue and the need for highly trained disposal experts and modern equipment will remain. The scale of the requirement can be understood best when it is realized that, in 1976, in one month there were 763 incidents in the United States alone which caused 28 deaths, 132 injuries and damage amounting to over seven million dollars. In Ulster, the British face an all-out "war" by the Irish Republican Army terrorists within a comparatively small and concentrated area. There is no political settlement in view, so it is likely that the cry "Send for Felix!" will be heard for a long time to come.

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Relative Combat Power

Major Ralph G. Rosenberg, US Army

The Pentagon's favorite method of describing the US-Soviet military balance reduces a complex power equation to the level of a weigh in for a prize fight. The tabulation of the men and arms on each side provides no judgment on what matters most—the forces that are available for a possible confrontation and their relative combat effectiveness.

Louis Kraar,
Fortune, December 1976

A DETERMINATION of relative combat power is essential for decisionmaking at all levels of command, yet there is no clearly defined methodology for its computation. Our current doctrine in Field Manual (FM) 100-5, *Operations*, and supporting manuals frequently refers to combat power as the key factor in determining if a force can successfully attack or defend (Figure 1).

An assessment of combat power for both the enemy and friendly forces involves much more than just adding up the number of combat organizations and weapons. It is the sum of all the quantitative and qualitative factors, both internal and external, that affect the organization's ability to accomplish a mission. The difficult task in determining relative combat power is to describe the

unquantifiables in such a way that they provide meaningful input to assessment.

This article will describe a subjective methodology for assessing relative combat power (RCP). The methodology is not intended to provide a precise value such as 3.5 to 1.

There is a reluctance on the part of many analysts to address such subjective factors as training readiness and logistics support because there are no hard data to support any conclusion they reach. The safe approach is to rely solely on quantifiable data like the number of divisions or number of tanks. However, commanders of tactical units need more than a bean count. This article will focus on the needs of these commanders at corps level and below for a usable RCP assessment for decisionmaking.

The technique consists of determining the following three types of data:

- A force ratio.
- Combat multipliers.
- Combat reducers.

The combat multipliers increase one or both sides of the force ratio while the combat reducers, which reflect vulnerabilities and weaknesses, degrade the force ratio in the same manner.

The computation of RCP must be done for each course of action under consideration because there is not a single value for RCP. It is dependent on the tactical mission of both opposing forces. The combat power of an understrength

motorized rifle battalion defending in a prepared position may be relatively high compared to the little combat power this same unit could generate if it were to attack. The conclusions in the intelligence estimate concerning probable courses of action provide a logical starting point for selecting opposing courses of action for determining RCP.

Force Ratio

The calculation of a force ratio can be made using very simple rules, or it can include a number of complex assumptions and subjective evaluations. The following three variables are particularly troublesome when attempting to quantify a force ratio:¹

- The disparity in the number and lethality of weapons between like organizations.
- The variations in concepts of combat support.
- The concentration of forces.

Disparity in Units

The differences in capabilities between organizations at the same echelon become more complex the higher we go in the analysis. Even at battalion level, a comparison requires assumptions that must address the following issues: a Soviet motorized rifle battalion with a company of tanks attached has

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less armored vehicles than a US mechanized infantry task force (three mechanized companies, one tank company); the firepower of a Soviet battalion will vary, depending if the unit is equipped with *BMPs* or *BTRs*; and, if the *Sagger*-capable *BMPs* are present, how is their firepower equated to the qualitatively superior *TOWs* in the US battalion task force?

Combat Support

The association of combat support and combat service

support units with combat units is difficult to determine because the doctrine for employment is different. The mirror image pitfall must be avoided. Supporting units must be analyzed in terms of what the opposing force wants them to do, not in view of what we would have them do in our organization. In the area of fire support, the Soviets form artillery groups while we assign tactical missions. They emphasize planned fires while US field artillerymen stress the importance of responding quickly to targets of opportunity. Both systems serve their intended purpose.

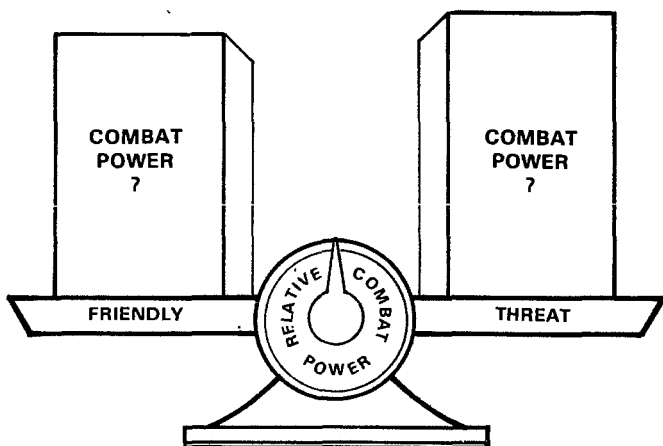


Figure 1

Concentration

The question of which units to count for the force ratio is also complex and requires assumptions. If a US unit is opposed by units echeloned in depth in the attack, or defending in successive belts, how many units are counted and at what echelon?

Quantification of the Force Ratio

The following rules of thumb are proposed to overcome the difficulties in quantifying a force ratio. Although the rules oversimplify the complex process, they provide a reasonable way to begin the assessment of RCP. Of course, adjustments should be made based on current information on the opposing force. What may be true for the Warsaw Pact does not apply to North Korea.

- Count only maneuver and field artillery units. Other types of units will be addressed as multipliers or reducers.

- Count all friendly maneuver battalions and threat maneuver regiments that could come in contact with each other on a given avenue of approach during the course of the battle. It may be necessary to limit this to a period of time such as the time to move reinforcements to the threatened sector. (Threat maneuver regiments were selected instead of battalions because the basic

Soviet maneuver unit is a regiment.)

- Count all US artillery battalions that are not in direct support or reinforcing another maneuver unit. Count all threat artillery battalions in regimental artillery groups in zone, and those artillery battalions in the division



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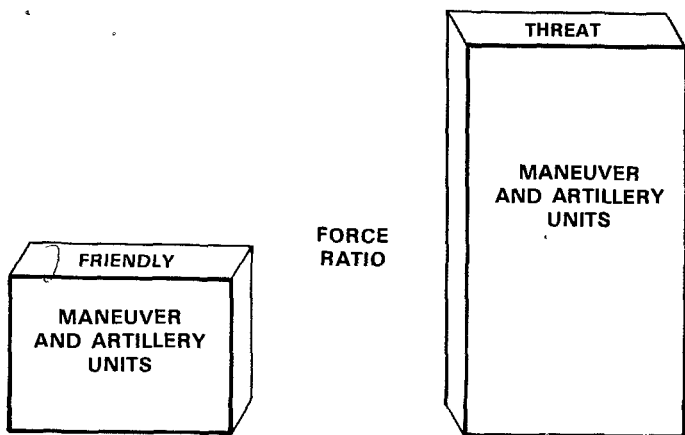


Figure 2

and army artillery groups that are in range to provide supporting fires. (Mortars and howitzers organic to maneuver units at regimental level or below have been considered as part of the relative value of the maneuver unit.)

- Equate units to relative values using the US maneuver battalion with a relative value of 1.0. The following are average relative values:²

Threat maneuver regiment	= 2.5
US artillery battalion	= .35
Threat artillery battalion	= .25

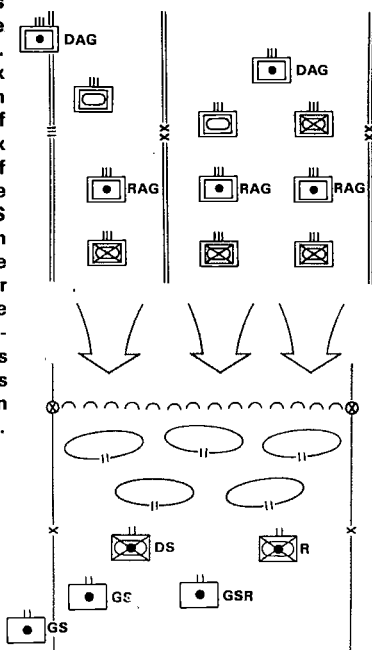
These values are not absolute. A range of values should be established in order to give latitude

to the computation. For example, artillery probably adds more combat power in a prepared defensive situation than in an exploitation. Therefore, a relative value for a friendly artillery battalion could vary from .20 to .60 (Figure 2).

Combat Multipliers

Combat multipliers are defined, as those factors that enhance a unit's capabilities to accomplish a mission. When assessing multipliers, it is assumed that the unit is fully trained, manned and equipped.³ The object is to determine those external factors

EXAMPLE: A US brigade is defending with five battalions astride three regimental-size avenues of approach, as shown. The threat force is estimated at six maneuver regiments, two each echeloned on three avenues of approach. The battalions of all six regiments are judged capable of joining the battle in support of the first echelon battalions. Five US artillery battalions are either in direct support or reinforcing the brigade or in general support or reinforcing to the division. The threat artillery consists of twelve artillery battalions organized in five artillery groups that can support the first echelon battalions and deliver counterfire.



FORCE RATIO COMPUTATION

US

$$\begin{array}{rcl}
 5 \text{ MAN BATTALIONS} \times 1.0 & = & 5.0 \\
 5 \text{ ARTILLERY BATTALIONS} \times .35 & = & 1.7 \\
 \hline
 & & 6.7
 \end{array}$$

THREAT

$$\begin{array}{rcl}
 6 \text{ MAN REGIMENTS} \times 2.5 & = & 15.0 \\
 12 \text{ ARTILLERY BATTALIONS} \times .25 & = & 3.0 \\
 \hline
 & & 18.0
 \end{array}$$

This force ratio of 1 to 3 now can be refined using the combat multipliers and combat reducers. These modifiers are applied in a subjective manner to both sides of the force ratio for this given set of tactical missions (friendly defends, enemy attacks).

Figure 3

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that increase the unit's capability.

FM 101-5 (Draft), *Command and Control of Combat Operations*, lists combat multipliers as terrain, weather, positioning and time of preparation, electronic warfare resources and logistic differentials. Others include deception, attack helicopters, tactical air support, airmobility, surprise, air defense artillery, combat engineers, combat service support, communications, knowledge of enemy order of battle and intentions, and leadership.

Each multiplier needs to be assessed to determine if it has a positive effect on either the friendly or enemy force. It is not possible to quantify each of these multipliers in terms of how many maneuver battalions they add to the force ratio computation. Instead, a subjective assessment of their relative worth is necessary (Figure 4).

This example shows how three of these multipliers—terrain, intelligence and time—can change the force ratio quantitatively. Assume the defender receives adequate early warning of an attack, deploys his forces and prepares and occupies good defensive positions on key terrain that blocks enemy avenues of approach. These are significant multipliers and could double or triple the defender's value in the computation of the force ratio. In our earlier example, the 1 to 3 ratio could become 1 to 1. Just the opposite effect could result if the terrain favored the attacker and

the defender was not occupying prepared positions at the time of the attack.

There were a number of incidents during the 1973 October War where the combat multipliers provided the difference between success and failure. One of the best examples was the defense by the Israeli 7th Brigade on the Golan Heights during the night of 8-9 October. Since the start of the war on 6 October, the brigade had been reduced from 100 to 35 *Centurion Mark V* tanks during attacks by four Syrian brigades. The fifth attack was launched by the T62-equipped 81st Brigade, 3d Armored Division, a third-echelon unit. During the seven-hour battle, the Syrians committed battalion after battalion and reduced the 7th Brigade to 11 tanks. The Israeli commander requested permission to fall back but was told to hold for five more minutes. The 11 tanks were re-positioned at an Israeli strongpoint and brought flanking fire into the attacking Syrian tank formations. This broke the attack in the nick of time as most of the tanks in the 7th Brigade were down to two to four rounds. The brigade commander attributed his success to the multipliers of "good ground, guts and gunnery."⁴

Combat multipliers also apply to offensive situations. One of the classic examples of a numerically inferior force conducting successful offensive operations was Jackson's Valley Campaign in 1862. "Stonewall" Jackson's Confederate command of 6,000

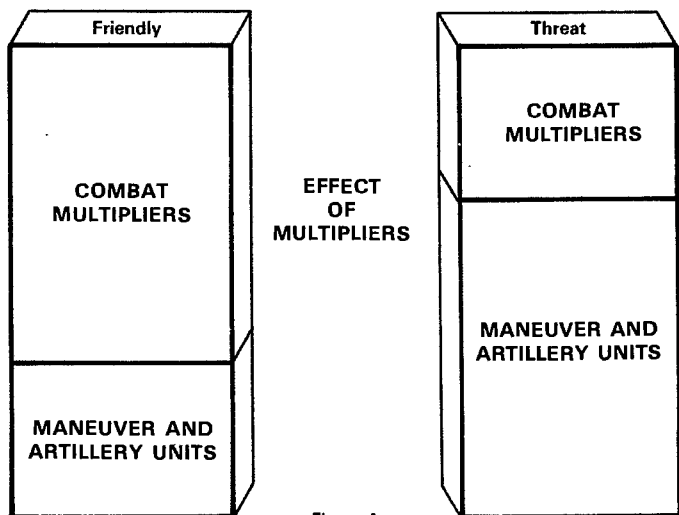


Figure 4

men, operating in the Shenandoah Valley, neutralized Union Forces two to four times larger by concentrating sufficient combat power at places of his choosing. The combat multipliers of surprise, deception, operations security and terrain were used skillfully.

Combat Reducers

Combat reducers are the vulnerabilities and weaknesses that degrade combat effectiveness. Although they are very subjective, difficult to determine

because of a lack of information and often transitory, they must be addressed if the RCP statement is to be valid. Many analysts are quick to list all of the problems our units have because they are readily apparent, but are unwilling to examine the opposing force for shortcomings. This unbalanced approach can very well lead a commander to make the wrong tactical decision. It is one thing to place an enemy regimental map symbol on the map, but quite another to assess the unit's capability to conduct offensive or defensive operations.

Some of the most common combat reducers are shortages in

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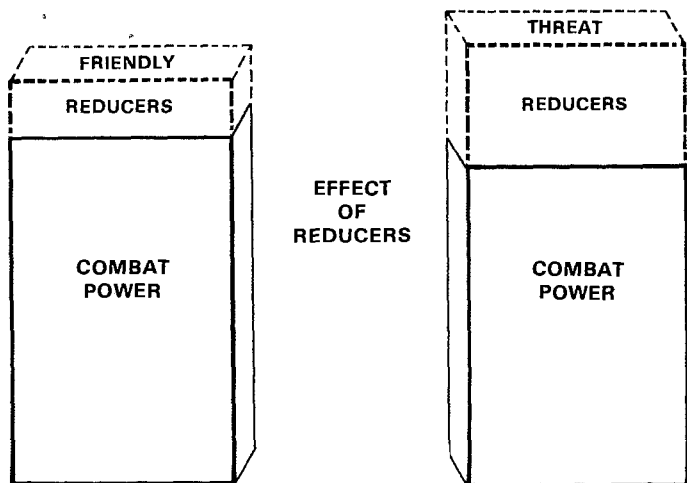


Figure 5

personnel and equipment, a low level of training readiness and inadequate combat service support in such critical areas as ammunition and petroleum, oils and lubricants (Figure 5).

Reduced Strength

Attrition, or reduced strength, usually is expressed as a percentage (for example, the battalion is at 60-percent strength). This value is of little assistance in modifying the force ratio unless the numbers are converted to a fraction of combat effectiveness.

An approach which relates strength levels to combat effectiveness is shown in Figure 6.

A shortage in personnel and equipment is one of the combat reducers that can be quantified to some extent. By using the curves in Figure 6, we can estimate that three 60-percent-strength battalions roughly equal one full-strength battalion in the offense. In the defense, two 60-percent-strength battalions have about the same effectiveness as one full-strength battalion. These curves are hypothetical and should be adjusted based on the order of battle of friendly and threat forces.

THE EFFECT OF REDUCED STRENGTH ON COMBAT EFFECTIVENESS

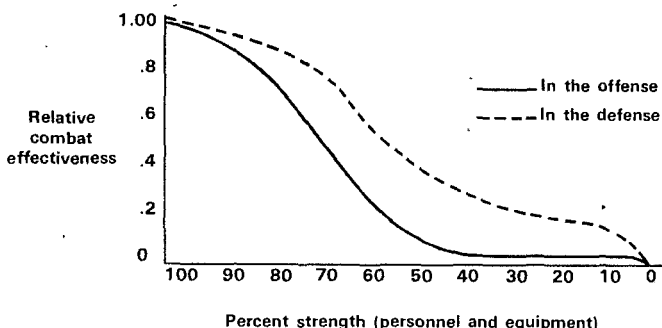


Figure 6

Training Readiness

An evaluation of training readiness is the most difficult reducer to assess. The RCP computation requires that a determination be made between the current state of training and that which would be expected for a combat-ready unit. The critical variables in training readiness are the time to train, both individually and collectively, and the available materiel resources to train with, such as ammunition.

Like all other multipliers and reducers, training readiness needs to be assessed in terms of a tactical mission. A unit could be well-trained to defend a specific geographical area but unable to participate effectively in offensive, combined arms operations.

The personnel system in effect by an army can have significant effect on training readiness. One of the fundamental weaknesses of the Soviet ground forces is the two-year conscription period with semiannual rotations. This results in nearly half of the conscripts, which includes most of the non-commissioned officers as well, rotating out of a unit each year. Similar problems plague most armies during peacetime.

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Combat service support can be another very important combat reducer. The assessment of this factor should address the question, Can the operation be supported adequately? It is harder to support an attack than the defense. The most important combat service support factors for the defender are the maintainability of weapons systems and resupply of ammunition. The attacker also is concerned with these, but needs sufficient mobility to press the attack and transportation assets to resupply his forces often over extended supply lines.

Motivation

The motivation of soldiers can be a powerful multiplier or reducer, but it may not be possible to enter this variable in the RCP computation for the opposing force. There were hundreds of cases in Vietnam where we learned the Vietnamese Communists and North Vietnamese soldiers had low morale, yet it did not seem to impact on their ability to attack fire bases.

Perhaps motivation should be addressed from the broader perspective of national will. Most soldiers fight fiercely to defend their homeland. However, in an offensive situation, do soldiers need to believe in the cause or will they just follow orders? Is the German soldier more highly motivated to defend the Federal

Republic of Germany than a Russian soldier would be to attack it? How does this affect combat power?

Operations Security

Operations security also is difficult to categorize as either a multiplier or reducer. Weaknesses in one force's operations security procedures must be assessed in terms of the other force's ability to exploit the weakness. There are significant differences in intelligence collection capabilities between opposing forces; therefore, it is important that the mirror image approach be avoided. A detailed analysis must be made to learn how the enemy "sees" the battlefield. Once this is determined, our own operations security vulnerabilities can be investigated.

Limitation of Force Ratios

Many readers may have concluded by now that there are too many unknowns and assumptions required to determine force ratios, combat multipliers and combat reducers. The further we move from the known to the unknown, the more risk is involved. No one likes to be wrong. Yet, if we limit our computation of RCP to a bean count, the commander will not have all the data that he deserves to make a correct decision. Many

battles have been fought in which the defender was greatly outnumbered but defeated the enemy. Conversely, numerical superiority alone does not ensure success for the attacker.

Conclusions

The assessment of relative combat power is made jointly by the operations and intelligence officers by using a force ratio as a base line and modifying it with combat multipliers and combat reducers. This helps the com-

mander decide if he should attack, defend or re-position units.

It is the qualitative factors that almost always make the difference in battle. These variables, although hard to ascertain and evaluate, must be considered in addition to the numbers.

There almost always is a shortfall between what units would like to do according to doctrine and their weapons capabilities and what really takes place on the battlefield. We must be careful not to inflate or degrade our estimate of either the opposing force or ourselves.

NOTES

1 A summary of the difficulties in computing a force ratio appears in Major David Dagnault, "Four F's of Force Ratio," *Armor*, March-April 1977, pp 28-29.

2 The computation of relative combat power values is based on the following assumptions: A US maneuver battalion (or task force) has 1.4 times the firepower of a threat maneuver battalion. The average number of battalions in a threat regiment is 3.5 (4 in a motorized rifle regiment and 3 in a tank regiment). Thus, $3.5 \div 1.4 = 2.5$. The US artillery battalion value of 35 is based on the assumption that 3 maneuver battalions equate to 1 artillery battalion. Thus, $1 \div 3 = .35$. A threat artillery battalion is assumed to have only 70 percent the firepower of a US artillery battalion. Thus, $.35 \times .70 = .25$. These data are subjective and should be adjusted to reflect current information on the opposing forces in the area of operation.

3 Under Army Regulation 220-1, *Unit Readiness Reporting*, the unit would be classified C-1 on Department of the Army Form 2715, *Unit Readiness Report Worksheet*. There is no comparable Soviet

unit readiness reporting system that is available for analysis. We apply Categories I, II and III to Soviet divisions based on our assessment of their strength in personnel and equipment. (For example, a Category I division has between 75 and 100 percent of its people and equipment.) In order to have a base line for assessing multipliers, it is assumed that US units rated C-1 or C-2 (at least 85 percent of their authorized personnel and not less than 90 percent of full Modification Table of Organization and Equipment reportable lines at or above 80-percent fill) are equatable to Category I units. It is recognized that any readiness reporting system is imprecise and subject to criticism. The rating, in itself, does not ensure combat effectiveness, and two units with the same rating (for example, Category I), mission and support may perform quite differently in battle.

4 Reference Book 100-2, *Selected Readings in Tactics The 1973 Middle East War*, US Army Command and General Staff College, Fort Leavenworth, Kans., August 1976, Volume I.



Tukhachevski: Ahead of His Time

Albert Parry

MARSHAL Mikhail Tukhachevski began his military career at 21 as an officer in a privileged guards regiment of Czar Nicholas II. A sublieutenant in 1918, he commanded Red armies within months and, by early 1920, an entire *front*. In the 1920s and early 1930s, Tukhachevski reshaped the Red armed forces, trained the new generation of Soviet soldiers in mechanized warfare, updated training, adapted the idea of mass tank formations and was the first to originate paratroops.

But Tukhachevski was not to lead the Soviet armies in World War II, on 11 June 1937, with seven other Soviet military leaders, Tukhachevski was shot on orders of Joseph Stalin. He became a non-person, purged from Soviet history and recognized again only after Khrushchev exposed Stalin's atrocities.

This article treats Mikhail Tukhachevski as a theoretician and innovator in three interconnected fields: the problem of defense or trench and fortification versus offense or free-wheeling maneuver in open space (via breakthrough and outflanking), the question of improved tanks in modern warfare, and the prospect of paratroops as a decisive phenomenon of tomorrow.¹

His first Moscow post after the Civil War was to head the Military Academy of the Worker-Peasant Red Army. This was the highest military school of Soviet Russia, heir to the old czarist General Staff Academy. Here and elsewhere, he lectured on his Civil War experience and on general warfare.

Through the 1920s, Tukhachevski put forth his brand of what he called Marxism which, to Leon Trotsky, the supreme civilian warlord of the Civil War, was half-

fr

baked. Still with the zeal of a new convert, Tukhachevski kept on propounding that, to be genuinely Marxist, the new Soviet military science should be dynamically aggressive, taking the path of worldwide conquest at once. Trotsky disagreed by saying that the world revolution should and would come spontaneously through the rising of the masses in each given country and that, only then, Russia's Red Army would surge over the borders to help. Meantime, the Russian Communists were to dig in, to agitate and wait.

Tukhachevski kept up his preaching. A war of the masses against the upper and middle classes, he proclaimed, was surely different from one between nations because a true people's army of workers and peasants would not, should not, be on the defensive but on the offensive only, carrying its drive far outside the confines of this citadel of socialism.

He also argued tactics with Trotsky. Space and time, speed and motion, reiterated Tukhachevski as he pictured his war of tomorrow, a contest not of deep trenches and stationary forts but of rapid maneuver, of fast and far-flung military and political moves. Trench and fort battles never would be fought again, Tukhachevski predicted, the wars of movement, of swift armed waves across wide areas and long distances, would be the overwhelming phenomenon.

Trotsky postulated that, with time, war technology was bound to improve both in the Soviet Republic and among its Western foes. Again,

there would be large masses of soldiers, better armed, and once more there would be a premise "for a tighter front" than the Civil War's loose lines had been, with their "thin, weak forces, poorly armed," practically lost in the steppes.

Nor would Trotsky grant Tukhachevski his complete dismissal of the future role for fortresses. He argued that forts and fortified cities would yet play an important role.



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Trotsky readily conceded Tukhachevski's military talent, but he derided what he called an "adventurist" element in his Civil War and Polish campaign records

International Command

One detail, in particular, annoyed Trotsky. This was when Tukhachevski proposed an international, instead of a national, Russian command of the Red forces that would take over the rest of the world from the capitalists of the West. In a letter to the Third International and published as an appendix in his book *Voyna Klassov* (1921, *The War of Classes*), Tukhachevski suggested an international military council, a kind of new general staff consisting of war-skilled Communist leaders from various lands. This was to be established immediately so as to have ample time to prepare that future worldwide offensive against the enemies of the proletariat.² It would be a long time before he would give up his brainstorm. Tukhachevski soon began to mute his early insistence on flinging an immediate military challenge at the capitalistic West.

He concentrated his considerable talents on improving the Soviet defense against what was thought, in the 1920s, to be a British-French threat of intervention and, in the 1930s, to thwart the Nazi-Japanese peril. He pondered the offensive for a later phase—for the time when the attackers would

be defeated and thrown back from Russia's soil and pursued into their own lairs.

As to the role of fortifications, so sweepingly dismissed by the early Tukhachevski, it was clear now that Trotsky was right and his young opponent wrong. There were, of course, fortifications in World War II, and high-quality Soviet troops proved their skill and stamina in holding their share of such strongholds—as at Stalingrad.

Tukhachevski's early thought triumphed most decisively in his prediction that the meat choppers of World War I trench warfare would not be repeated in the next war, certainly not on their formerly gigantic scale, that great maneuvers of massive armies would dominate space and time far more than they did in 1914-18, and that the Soviet forces must be and would be made ready for quick breakthroughs and vast outflankings of the enemy.

In Tukhachevski's visions of future wars, tanks played an important role. He paid heed and respect to both French theory and German practice of the 1920s. He was among the first Soviet commanders to learn of De Gaulle's writings on tanks, reading these in the original.

In the middle and late 1920s, the secret arrangement of Soviet-German military collaboration reached its height, a consequence of the 1922 Treaty of Rapallo whereby the two governments thumbed their noses at the victorious entente. The unique military partnership of the Weimar Republic with the Soviets lasted until Hitler

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came to power. In the years 1923-33, some 70,000 German military and civilian personnel lived and worked in the Soviet Union, building and testing Germany's new arms forbidden by the Versailles Treaty, especially planes and tanks. The Red Army would profit from the German war technology thus developed on Russian soil. The bitter payment would come later when Hermann Goering's *Luftwaffe* and Heinz Guderian's panzers returned to wreak havoc.

Tukhachevski set out to enrich the Red Army with the best tanks then possible. He stepped up their manufacture in Soviet plants. He and his friends, Ieronim Uborevich and Iona Yakir, trained soldiers and officers in the new ways of tank warfare. Before his fall and death, Tukhachevski succeeded in forming an armored corps in the Red Army, consisting of two tank divisions and one motorized division. He intended to expand it into a yet more formidable force, like a fast-moving fist to punch through a foe's lines while other troops outflanked and enveloped that future enemy.

Obstacles

Even at the height of his power, his work with tanks was beset and delayed by exasperating obstacles. One was the low quality of the product, for Soviet armament factories were only beginning to learn. Alexandre Barmine, a defector from the Soviets now residing in Washington, D. C., tells in his

reminiscences how, in 1933-35, working under Tukhachevski, he was in charge of shipping tanks and other motorized weapons to the Near and Middle East. Once, having promised the Turks some tank deliveries from a Leningrad plant, the Soviets could not make the shipment, and Barmine wondered why. He went to Tukhachevski who listened gravely, then said: "I would give them to you gladly, but I don't think you should deliver them. Here, read this report."

It was from the commander of the Soviet Far Eastern Army analyzing some recent fighting on the Mongolian border between Russian and Japanese troops. Tanks, artillery and aircraft had been used since both sides regarded that bloody steppe "as a testing ground for new types of armament and munitions." The Soviet commander in his report complained about his tanks, which were riveted, not welded:

Not only were these tanks extremely vulnerable to antitank artillery, but the impact of exploding shells would drive the rivets into the tank with such force that they became as fatal to the crew as bullets.

Another handicap on Tukhachevski's tank path was the opposition from Semën Budënnny, the cavalry commander of Civil War fame. At first, in the early 1920s, Budënnny was rather pleased when he heard Tukhachevski inveigh against trenches and praise war of motion. He thought that Tukhachevski would doubtless support the continued rôle of the

cavalry which he stressed. But Tukhachevski dismissed the cavalry. He kept on translating the old motion-in-space of the Civil War era into this latter-day technology, by speed and might, he meant tanks, not horses.

As late as May 1937, Tukhachevski recalled another puny argument of the antitank faction

*some of our comrades were alarmed by the introduction of tank armament on a mass scale into the Army. They feared [the effects upon tanks of] rains, snow, autumn, spring, and so on. Certain comrades said that, given our roads and our climate, tanks could be used 'only one and a half months a year.' However, the reality of life itself negated the fears of these timid theoreticians. Tanks act in their top form in the summertime and in winter, in the spring and in the fall.*³

Patiently, stubbornly, Tukhachevski kept up his advocacy, his insistence that the new day meant machines, not hoofs. He was aghast to learn how defiant his critics were. In some units, his newly introduced tanks were hauled by horses.

But a telling blow came from Stalin who, in the late 1920s, agreed with Budënniy. Early in 1928, Stalin ruled that Tukhachevski in most of his arguments for modernization was talking non-Marxist nonsense.⁴

Unabashed, Tukhachevski wrote and published more of his pleas for mechanization and other modernization. His reports to Stalin to this effect were long and persuasive documents. Stalin was having

reluctant second thoughts. In 1930, in the extensive war games near Moscow, he and the other Politburo members for three days watched the action of the only two units then boasting modern armor. The dictator was impressed. He authorized new funds to build more tanks.

In 1933, at the war games in the Byelorussian Military District, Tukhachevski said that he was pleased, yet warned the troops that the Red Army was still lagging, especially in armor, that it had mostly tankettes, not tanks. He called for an enhanced effort; he promised that some day there would be a tank regiment to each rifle division, and a tank battalion for each rifle regiment.

Many Reforms Canceled

Five years later, amid the Great Purge, Budënniy's pal of the old *Konarmiya* ranks, Army Commander G. I. Kulik, appointed to take over Tukhachevski's charge of ordnance, did his—and Stalin's—worst to cancel many of Tukhachevski's reforms. He withdrew light automatics from the Red infantry as "unsuitable," and he stopped the Soviet production of antitank and antiaircraft guns. Above all, he abolished the tank fists, disbanding the formations built up by Tukhachevski; instead, he dispersed the tanks piecemeal among the infantry. The mighty fist was to become a scattering of small finger stabs.⁵

Thus, it happened that, at the

start of World War II, only the Nazis were ready with De Gaulle's superb idea, putting into practice the use of panzer divisions as a mass of punching and outflanking monsters.

The Russians remembered Tukhachevski's prodigious tank effort much later, reviving it almost in the midst of the war. Today, tanks are foremost in Soviet field armaments, exactly as Tukhachevski forecast.

Of all his insistences and innovations, paratroops proved to be Tukhachevski's most original and epoch-making, with the greatest impact in the West. The idea was clearly part and parcel of his neo-Napoleonic and would-be Marxist assault on the world, he would drop his bold revolutionary soldiers behind the enemy lines, not only to outflank and surround and hit the foe in the back, but also to rouse the masses in the capitalistic rear against their oppressors.

The Russian interest in parachuting predated World War I. In 1911, G. Kotelnikov reduced the large, clumsy parachute to a compact package. He demonstrated it to the czar's early flyers, but a grand duke in charge of aviation rejected the proposal.

*A parachute is harmful to aviation, because at the slightest danger the flyers will save themselves with parachutes, abandoning the planes to crash.*⁶

In the early 1920s, civilian parachuting was well-developed in the United States but not in the Soviet Union. In 1929, however, Leonid Minov was the first aviator to parachute in his country.

Library of Congress



Tukhachevski, early 1920

TUKHACHEVSKI

Tukhachevski took immediate notice. That year, he arranged for a small number of soldiers in the Leningrad Military District to be trained in jumping from planes. The district's 1929 maneuvers first saw a modest-scale exercise of parachuting warriors. In 1931, three brigades of paratroops were formed at Leningrad, Minsk and Kiev.⁷

Mass Jump Demonstrations

The news of the novelty spread, soon reaching the West, resulting in a lively discussion among both the military and the general public. Stalin, usually so secretive, for once would not conceal this achievement, he ordered his commanders, commissars and ambassadors to boast openly. Foreign generals and colonels were invited to the Soviet war games to see the mass jumps. Films of the more spectacular of these were sent to Soviet embassies abroad to be unveiled proudly before the invited high commands.

A notably impressive mass jump was done under Tukhachevski's direction at the large war games near Minsk, deliberately close to the USSR's western borders, on 10 September 1936. Some 1,200 Red Army men were dropped safely onto an "enemy" field, their rifles and machineguns at the ready. Light cannons also were parachuted from planes. A picturesque touch was added by a regimental band wafting down at the same time.

Within eight minutes, the

soldiers and their light artillery formed battle lines and went into mock action. The "enemy" field captured, the "hostile" troops were driven off. Tukhachevski and his staff watched the show with great elation. Foreign observers, including (reportedly) military guests from Nazi Germany, made grim notes. Two weeks later, in a similar game near Moscow, 5,200 Soviet paratroops participated.

The press stories and photos, the explicit films and the attachés' reports resulted not only in sharp interest but also in some skeptical comment in the West. Specialists and laymen said that yes, they were intrigued by Tukhachevski's sensation, but wasn't the marshal too sanguine? Wouldn't the potential foe, now forewarned so ominously, be prepared to shoot the paratroops down in midair?

In London, in 1935, when the Soviet envoy Ivan Maisky showed a paratroop film to the British command, most of the generals turned up their noses. General Alfred Knox, who once had aided Aleksandr V. Kolcha's White forces in Siberia, declared: "This film once more confirms my opinion that the Russians are a nation of incorrigible dreamers." But General John Greer Dill, then far more important than Knox, was intrigued. Britain's foremost strategist of that era, he was director of Military Operations and Intelligence in 1934-36. When Tukhachevski visited London in January 1936, he and Dill met and conversed, the main topic being the Soviet paratroop innovation. Dill sought

from the Russian sundry vital details such as the problem of landing artillery by parachutes.⁸ Also Captain B. H. Liddell Hart, the much respected expert of things military, opined that the parachute stroke had possibilities not to be underrated. When the marshal traveled to Paris, his French admirers hailed him as *ce Maréchal Parachutiste*.⁹

World War II

But neither the British nor the French did anything beyond their excited talk. Not so the Nazis. At once, Marshal Hermann Goering and his aide, General Ernst Udet, began to tap their first *Reichswehr* men for paratroop training. The men's initial lessons were preceded by watching the films of those Minsk and Moscow mass jumps. When World War II came, the Nazis, having mastered this schooling well, were the first to use Tukhachevski's novelty in combat. In the summer of 1940, they dropped their paratroops upon the forts and fields of the Low Countries and France, capturing these with no casualties of their own.

Later in the war, American and British paratroops jumped over Sicily, the Netherlands and other battlefields. Two decades later, in 1965, Soviet Lieutenant General Ya. P. Dzenit reminisced:

In 1945, north of Berlin, I met General Ridgway, who commanded an American paratroop corps. My conversation with him had a rather

*general nature and has by now partly faded from my memory. Yet I do recall one thing firmly—the American's frank admission that the Soviet Union was the motherland of paratroops and that Marshal Tukhachevski was their creator.*¹⁰

In November 1972, I wrote to General Matthew B. Ridgway, quoting the Soviet general's memoir and asking for an elaboration. General Ridgway replied that, in 1945, while commanding the US XIII Airborne Corps, he met and talked with several Soviet generals, among them an army corps commander whom he remembered as General Yakov Tsanishev (not Ya. P. Dzenit) and to whom.

I no doubt made reference to the fact that I had noted with keen interest the reported use of paratroopers made by Soviet army commanders during some of their maneuvers in the mid-1930's.

General Ridgway wrote me that, in 1936, he was so impressed with the news of the Soviet paratroop experiments that,

*charged with planning a large two-sided maneuver in our Middle West, I introduced a theoretical paratroop unit (I believe we then had none, except perhaps a platoon just being organized in the Panama Canal Zone) to seize and hold an important bridge in the zone of advance of our then only armored unit, the 7th Cavalry Brigade, mechanized. The desired surprise was achieved, with resulting stimulation of thought of ground commanders.*¹¹

Thus, the American variety of Tukhachevski's pioneer paratroops

was launched, to blossom, together with the allied British paratroop units, into a mighty force of air-to-ground assault in World War II

The Soviet Union alone, the cradle of the idea, lagged behind in actual paratroop combat in World War II. As with Tikhachevski's daring proposal of a De Gaullist use of tanks, mishandled by the marshal's successors after his execution, so, in this matter of paratroops, Stalin's subordinates

did little or nothing to rain daring, deadly attackers down upon the Nazis until quite late in that mammoth conflict. But with this difference. In great breakthroughs and outflankings, in massive employment of tanks, they did, finally, if late in the war, follow the marshal's will and testament. Least of all, too little and too late, they pressed with paratroops which turned out to be Tikhachevski's brightest contribution

NOTES

1 A brief, good summary of Tikhachevski's theories is Lieutenant Colonel Hugo W. Matson, "Tikhachevski: Dynamic Revolutionary," *Military Review*, May 1969, pp. 38-42. For their detailed exposition, see the marshal's own writings in *M. N. Tikhachevski, Izbrannyye proizvedeniya* (*M. N. Tikhachevski, Selected Works*), Compiled by G. I. Osokin and P. P. Chernushkov, Volume I, 1919-27; Volume II, 1928-37. Ministry of Defense of the USSR, Military Publishing House, Moscow, USSR, 1964. Volume II includes an appendix listing 122 brochures, articles and other printed items by Tikhachevski, presumably the complete bibliography of his lifetime.

2 M. N. Tikhachevski, *Voina Klassov stat'yi 1919-1920 gg.* (*The War of Classes: Articles of 1919-1920*), State Publishing House, Smolensk, USSR, 1921, appendix.

3 M. N. Tikhachevski, *Selected Works*, op. cit., Volume II, p. 247.

4 For "nonsense," Stalin used the insulting Russian word *akhineya*. Lev Nikulin, *Tikhachevski biografichesky ocherk* (*Tikhachevski: A Biographical Account*), Ministry of Defense of the USSR, Military Publishing House, Moscow, USSR, 1964, p. 169.

5 On the astonishing ineptness of Kulik, see *Stalin and His Generals: Soviet Military Memoirs of World War II*, Edited by Seweryn

Bialer, Souvenir Press, Ltd., London, Eng., 1970, pp. 143 and 575.

6 Albert Parry, *Russian Cavalcade: A Military Record*, Ives Washburn, Inc., N. Y., 1944, p. 273.

7 On the early organization and training of Soviet paratroops, see *Ibid.*, pp. 271-77.

8 Ivan M. Maisky, "V Londone" ("In London"), *Marshal Tikhachevski vospominaniya друзей i sotratnikov* (*Marshal Tikhachevski: Reminiscences by Friends and Fellow Combatants*), Ministry of Defense of the USSR, Military Publishing House, Moscow, USSR, 1965, pp. 229-30.

9 See Rémy Roure, "Le 'Maréchal Parachutiste,'" *Le Figaro*, Paris, France, 5 May 1954.

10 Ya. P. Dzenit, "S vyshki" ("From the Top"), *Marshal Tikhachevski Reminiscences by Friends and Fellow Combatants*, op. cit., p. 133.

11 Letters from General Matthew B. Ridgway to Albert Parry of 21 and 22 November and 2 December 1972. In addition to the Soviet sources cited above, I recommend the short (93 pages) but good biography, Lieutenant General Alexander I. Todorsky, *Marshal Tikhachevski*, Political Literature Publishing House, Moscow, USSR, 1963.

A Challenge to Professionalism: Leadership Selection



Roger A. Beaumont



THE needs of peace and war vary widely. In peace, nothing so becomes a careerist as a strong sense of economy and a bland demeanor. In war, the reverse is not only desirable, but vital. The disparity of these elements in the reservoir of military talent has caused many countries trouble in the modern era. In recounting his experiences in secret research and development work in World War II, novelist Nevil Shute told of how his team effected change in the face of a bureaucracy which was still applying peace standards in wartime: They sought out a reserve officer with private means to carry the ball through the system. Sociologists have come to call the ability to thumb one's nose at a system in such circumstances "deviation credits." Others have lamented the passing of the MacArthurs, the Mitchells and the Pattons whose wealth and status independent of the service allowed them to act as a catalyst.

A century and a half ago, Alexis de Tocqueville saw some dangers in the forming of a totally middle-class officer corps with careerist goals. Without the inherited status of aristocrats—the normal social fabric of officer corps in Europe for hundreds of

years—De Tocqueville hypothesized there would grow a predilection for war to assure promotion and a collapse of gentlemanly honor.

In terms of the rewards and attitudes provided for the military professional by the body politic in many Western nations since 1800, those states have received far more than they deserved in the way of dedication to duty and standards. Yet, since 1953 and the first really large establishment of services in peacetime in America, the erosion of the hardy flowers of professionalism has been mounting. The hostile environment of fashionable criticism oriented to win votes from some members—and not the least vocal members—of Congress has not made a service career more attractive to many young people who look to the Congress for guidance in terms of their values. If cutbacks and castigations are their lot, who will choose to build their future on quicksand? The interservice battles of the late 1940s and 1950s were perhaps the most intense in view of the radical restructuring of the services, but also more dramatic because the upper ranks were engaged visibly and less formally restrained by civilian authority in the pre-McNamara era.

The constantly changing technological environment of war caused increasing emphasis on support services, research and

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development and a variety of complex organizations which had less and less to offer young men looking for an active life, positive leadership and adventure. It created a source of much disappointment for many aspirants who chose military service as a semiathletic refuge from desk-bound civilian careers. Thousands of young officers were "turned off" when they found themselves consigned to the role of oversupervised petty administrators. The "constabulary"* function has had a large component of clerical roles built into it.

Packaging of Systems

In any event, Congress, the press and the service leaders have focused on the "macro"—that is, major weapons programs that aided bureaucratic survival and extended budget control beyond the question of potential utility. The "packaging" of weapons systems and organizations with "sexy" labels—SAC (Strategic Air Command), *Polaris*, Pentomic and STRAC (US Strategic Army Corps)—became a part of the politics of organizational prosperity and survival. As Harvey Sapolsky noted in his study of the *Polaris*, the fads and concepts of "scientific management" often were camouflage for conventional bureaucratic politics with a small "p." While structuralists may shrug and say, well, that's what comes out of the spout when you put the refinery together that way, it is little comfort for those whose welfare and survival depends on the system that has evolved under all these pressures.

Future historians, free of social tension, may well judge the war in Vietnam to have been a relatively cheap way of finding out that the attempts of self-confident civilian rationalists to play general staff miscarried. There is little other comfort and the failure of anyone to come forth with the "lessons of Vietnam" or some such study which would attempt to at least lock the barn door is understandable. Yet it is foreboding, for lessons learned fade and alter rapidly; the same thing prevailed in World War II and Korea.

*Referring here to the term used by Morris Janowitz to suggest a shift in the role of officers from heroic leader to the career administrator in the nuclear age.

In any event, the war in Vietnam had its lessons: Don't fight an enemy on ground you can't blockade (it didn't work in 1812-15, in Korea or Vietnam). Don't eliminate "surprise" from the principles of war without expecting a logarithmic increase in costs. Don't expect a generation of officers trained in a replay of 1914-18 (Korea, 1952-53) to think faster than 2½ miles an hour. Don't expect unit morale to go up in a short-tour system. Don't cancel capital-intensive tactical technologies such as stand-off missiles and expect not to mortgage your skilled labor such as pilot hostages. Don't lose sight of the past and focus completely on simplistic current policy studies or you may be embarrassed—for example, riverine warfare; the reinvention of the azon bomb; and the ignoring of the Strategic Bombing Survey's findings on how bombing doesn't break civilian morale. It is little comfort to rationalists to consider that Winfield Scott or David Farragut might have designed a strategy for Vietnam as effective as anything that came out of think tanks and puzzle palaces. Yet it is not altogether sad to see the human factor proving yet as important as organization and technology, even when careerism as a reflection of that factor seems to some to pose the greatest challenge of all to military effectiveness.

Stories have long been told in officer's clubs and wardrooms—many of them horror stories—of the careerist reflex of service academy graduates, old boy networks, protective associations and the like. It is naïve for anyone to be surprised that given the short shrift handed to the military profession in terms of social acceptance and budgeting that those so treated should not favor those serving on a short-range basis. Why should the "Christmas help" be rewarded on a par or above the level of those who have served out their time on short rations and eons between promotions? Surely Congressmen, professors, bureaucrats—and people in general—show little inclination to share power and status with newcomers as an example to poor benighted military professionals. There are some "nuances"—that is, what Sir John Hackett has pointed out in "The Profession of Arms": *Military professionals are expected to get out there and get killed if that's what it takes.* In times of recent crisis, corporate boardrooms, picket lines and campuses have been considerably safer than combat even in "limited war," yet their standards have been thrust on the military by those apparently unaware of the fact that too rich or too lean a mixture can produce dangerous side

effects from military systems. Either alienating the military or asking it to shore up political bankruptcy, or sealing it off, or forcing it to lobby can invite politicization of the military.

Military government, after all, is a far more normal pattern in the modern world than is the relatively smooth-functioning liberal democracy seen in the United States and Western Europe, with only two dozen of the United Nations' 180 members under the latter system. That the stability of those systems is out of tune with the wilder and darker aspirations of the age can be seen in the grotesque blur of nihilism, lunacy, gangsterism and power fantasy which has been lunging for the tiller since the early 1960s. The paradox that the military is now respected as an exemplary model of self-control and efficiency in the face of the crescendo of shrill demands for rejuvenating chaos is not completely comforting to students of politics, or of military history, or to military professionals themselves.

Social and Political Consciousness

The boundaries which once zoned off military and naval officers—functions of space, time and technology—are worn away and have forced a social and political consciousness in a profession which once offered a semimonastic refuge from materialistic competition which had its own rewards and its punishments, and which embodied the concepts of service, honor and duty. The growth of "special warfare," "hearts and minds," "*la guerre révolutionnaire*," "civic action" and similar concepts have pushed military and naval roles into the realm of clandestine intelligence, propaganda and public administration. Morris Janowitz and Michael Howard have long described the widening gap between the heroic fighter role and career realities in an age of "constabulary" functions. A crucial question of the Zumwalt period was how the Navy in transition could over-compensate by becoming too "relevant" and "with it" when those characteristics were overlapping into minority radical politics.

Yet it seems naïve to suggest that the professional military in America or anywhere else were living in totally encapsulated bell jars, dreaming of grails. The history of naval and military

administration in America does not reveal as clear a boundary between professionalism and politics as formal organization charts suggest. Interservice and intraservice politics have always been there and often colorful. Nevertheless, more was and is expected of them. The curious double standard of modern guerrilla war—soldiers must fight clean; if they fight like the guerrillas, who are heroes, they are criminals—has its analogy in the view of military professionals by their critics. The implicit criticism of the American officer since the days of Benjamin Stoddert and Benjamin Lincoln has been keenest when he has drifted from his implied pedestal. The criticisms of the Proxmire-Aspin ilk are based on the presumption that professional military men are somehow immoral in expecting the same kinds of rewards that accrue to their equivalents in the Congress, business, the civil service and higher education.

In this context, there is a flaw in the structure of the military professional system, a flaw which like the other aspects of military organization short of combat has a counterpart in civilian organization. It may be that as in so many other cases—staff and line, chain of command, span of control—the military will have to jump a conceptual hazard before the rest of society. It certainly seemed the natural thing to order the services through the process of integration almost 30 years before the rest of American society—a society which, while presumably more liberal in essence, has had far more unhappy experiences with the simple aspect of integrated schools, and which generally still maintains barriers against job and management integration more firmly than the military. The flaw which emerged in Vietnam is one which touches on the question of integration indirectly and on organization more directly: leadership selection.

There is no area of modern organizational and administrative thought more shot through with preconception, imprecision, folklore and gut feelings than the area of leadership. In World War II, when the British Army applied psychiatric leadership selection, the Guards resisted it and argued in favor of more effective traditional, intuitive methods. The Guards were right, perhaps for the wrong reasons, but the psychiatric system did not yield convincing results. While much has been written—literally thousands of books and articles—*relatively* little hard experimentation and correlation has been pinned down. What little is really

"hard" in the area of leadership or even performance prediction is almost comical. We know such vital facts as the fact that successful executives tend to be taller and have good tonal memory. We know that the air cadet selection program in World War II did well in predicting pilot skill—which unfortunately is not always related to leadership. The squad leader phone test—better leaders answered the persistently ringing phone when waiting alone for the interviewer—was a gross indicator.

Forms of Testing

Various forms of the Leadership Reaction Test which evolved out of the OSS (Office of Strategic Services) assessment system have become popular. Even though the OSS team was unhappy with the results of its system, its concept of team interview and hands-on testing has been adapted in many different varieties. International Telephone and Telegraph has been using it for over 15 years with uneven results. It is better at picking potential failure than success, no help in determining where to put critical and scarce resources of time and money in executive development. Nevertheless, the "assessment center" approach is relatively objective. Sending people out of the organization to be tested by disinterested professionals in the execution of basic tasks has some advantages. It assures a somewhat higher promotion rate for minorities otherwise penalized by institutional racism, by the veiled racism of "professional criteria" or simple "old boyism." —Some Federal contracts require the use of assessment centers in management selection, and the Army is experimenting with it although with apparently unhappy results.

Given all the imperfections and imprecisions, what if leadership could be isolated as a trait and tested for with some reasonable predictability? Is truly objective, precise measurement in such a case really what anyone is seeking—or what anyone wants? Experiments in small group behavior have shown that usually people who have good ideas are not popular; indeed, they are often the least popular members in small groups. What if creativity is a correlate of leadership? Is this not a paradox? What of leaders in routine versus leaders under strain? But, then, is a scenario of leaders selected by objective means more implicitly

wasteful or inadequate than the intuitive methods which place a high premium on conscious or unconscious needs? Might experimenters not find ultimately that there is a gap between apparent leadership *presence*, à la Custer or Hitler and leadership *effectiveness* à la Carl Vinson? A rich subject for debate indeed. Do we really want leaders selected without being able to at least mythologize or participate symbolically in their selection? When William Buckley said that he would just as soon be governed by the first 2000 people in the phone book rather than the Harvard faculty, he stated the case flippantly, but well. Is it safe to make leadership so apparent a skill that it reinforces elitism? Does one want leaders to be so secure in tenure and surrounded not by yes men or coercive instruments, but shored up rather by the aura of genetic surety that objective leadership selection would produce? Yet what is the alternative?

The Alternative

The alternative is at present the system of pleasing one's superiors. The concept of officer efficiency, like the theories of physics, progressed long and far without being pinned down to certainty. Its effects seem to have been particularly pernicious in the post-1953 services where ticket-punching, back scratching (and backbiting) and a variety of other clichés and vulgarities have been cited as the "road to promotion and pay." It is, of course, not merely a military problem. In 1972, an interview of young civilian executives determined that the "skill" most sought by young aspirants was to be "well-liked." (In view of this, then, one might well ask what will the fate be of men whose wives reject the role of supporter and entertainer, especially at a time when senior officers or executives look for men able to stand their ground in the face of insistent womankind?) At all levels, then, the dimension of the informal, of "small-p" politics continually intrudes itself, and blocks an easy answer to the crucial question: What happens to morale if objectively selected leaders were put in charge in any organization? As the social scientists say, clearly more research needs to be done.

But why? If there are so many pitfalls in tampering with the old systems of "natural" selection, why rock the boat? Because the

question already has been raised, and demands mount in the shape of audit, systems analysis, academic and journalistic critiquing that have already destroyed much of the old, intuitive organic world that our ancestors knew, and strove to escape. In an age when the historical sense has been weakened in education, many have lost sight of the fact that there have been benefits as well as unpleasant side effects from technology. The threat of high infant death rate and flagrant urban political corruption have been reduced. Even in war, death from disease and battle has been reduced dramatically. In the realm of society and politics, the pressure is toward quantified objective analysis and justice for all. The cost of forcing egalitarianism for its own sake in America is estimated at \$55 billion each year in the Federal budget alone. The challenge to the professional officer, in these trends, is implicit: Get ahead of the game and find out what can be done to get rid of the effects of careerism implicit in senior-subordinate rating and leadership selection at the service entry point—or someone else will do it, with little concern for combat effectiveness or organizational viability. The hard bullet of peer group and subordinate evaluation and a balance of assessment center scores against superior ratings may have to be bitten. At least, multiple factor rating would guarantee a broader range of traits—sound design from the standpoint of evolution and survival. This harks back to the need for different types in different situations.

The wave seems steep and ominous as it grows. Yet one can ask easily, is the subordination of self and of principle implicit in the present system really in consonance with the tradition of Nelson and Sims, let alone congruent with any concept of rational organization?

To steer closer to the shoals, it is not particularly comforting to review the experimental data which shows that intelligent and creative people are often pushed out of experimental groups as too unpleasant or threatening. It certainly suggests that whatever the advantages of the peer-group rating system, for example, there are some dangerous aspects. Rating under that system may be correlated with promotability. But what does that really mean? It is ironic to consider that promotability in peacetime may not reflect anything more than promotability in peacetime. The record of such "amateurs" as John Paul Jones, Dan Morgan, Nathanael

Green and Andrew Jackson has carried little impact in the age of military professionalism, the successes of Lawrence of Arabia, Abdel Krim and General Giap notwithstanding. Recent social science research on the actual dynamics of promotion rather than career patterns per se has suggested that the main determinant in officer promotion is visibility and that actual performance measurement outside of such skills as aircraft piloting is ephemeral.

Multifactor Analysis

What is the solution? It seems time to move in the direction of multifactor analysis, with a strong emphasis on forced ranking, factors to include such things as peer-group, superior-subordinate and subordinate-superior ratings, assessment center-war game performance, periodic testing and a greater emphasis on mission performance evaluation indexes in maneuvers, exercises and drills as opposed to the accountant-oriented criteria which bring out so much of the petty clerk in the serving officer. Another mechanical change along with multifactor rating which would do much to reduce anxiety through ambiguity in the services would be a clearer articulation to entrants of promotion probabilities and a casting out of the trade-offs between retention and paying off. A little actuarial deftness might not only save the government money in the long run, but avoid the alienation of the reserve pool, and face the realistic sharp cuts in the step-pyramid of promotion that are not communicated to young officers—or in many cases, older officers. The proliferation of star ranks has not helped make clear the possibility that progressive exit and cash settlement may be realistic strategies in a profession which is much like professional athletics. A sliding scale of termination settlements then might reduce further the need to cozy up to seniors by providing the device for the exercise of conscience which Monday morning quarterbacks reviewing the crises of conscience in Vietnam often cite: resignation. What they seem to forget is that resignation for officers in the armies of old was a far more meaningful strategem when many had private means. Under the purchase system, it could be positively attractive. In our age of leveling pressures through confiscatory taxation aimed mainly at the middle class from which the bulk of the officer corps is drawn,

it is naïve to point to British or American aristocrats as examples. A lump sum lateral departure arrangement beginning at 0-4 might seem to knee-jerk defense critics a subsidy to early retirement. Nevertheless, the cost of subsidizing the conscience through a cushion of private means has always been borne by society in one form or another. If people in a profession, which for social and economic reasons has often had low value in terms of transferability to the private sector, are to be expected to act like statesmen, then a structure of some kind which reinforces such behavior must be built to generate and reward that behavior in the face of growing counterpressures.

Time for Review

In any event, it is time for the mechanical adjustments to be reviewed in the wake of the soul-searching that has stemmed from Vietnam and Watergate. Continual gnashing and wailing is not a strategy. The pressure is mounting, but there is time to design and observe experiments along hard-headed lines, and to keep the baby separate from the bathwater. Defending a system based on mysticism, momentum and evolution will not sit well with observers who feel that the current system is virtually a random series of exercises in applied psychology and compliance skills which produces chameleons rather than lions. At the present time, the system may well be described as attrition, competition or evolution—but rational selection it is not.

In the past, native ability and collective wisdom of men tested by the frontier, the building of railroads, cities and industry and shiphandling created other systems and other expectancies. That technology and time has changed much of that is obvious. That everything should not change with it is vital, but less obvious. In any case, arguing that the codification of whim and impression, especially in the face of growing data on institutional racism and the "halo" effect, can prevail in the face of demands for a systematic search for the dimensions of leadership is not going to wear well over time. The winds of change are mounting. There is, therefore, an opportunity to set canvas for a better course, or drag anchor. It is still a matter of choice.

MR

OTHERS IN REVIEW

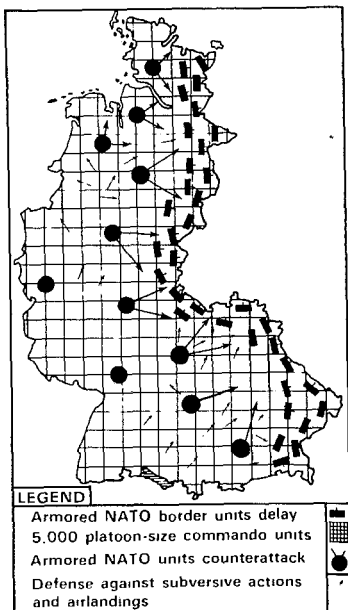
Area Defense

By Hans Joachim Loser
ÖMZ, July-August 1977 (Austria)

The defensive strategy of the Soviet Union has taken an offensive turn over the years. At the same time, NATO's defensive strategy of flexible response has become equally less credible as a deterrent. It is time for NATO to reassess the situation before it is too late. NATO must find a new strategy which will once again offer an effective deterrent, stay within budget limitations, examine the Warsaw Pact threat, consider future technological defense capabilities, exclude the possibility of nuclear annihilation and renew the feeling of security. The West must find a new way to re-establish the strategic and operative balance.

The new strategy must include the existing strategic and tactical nuclear umbrella. Included also must be an effective area defense to prevent blitzkrieg and population destruction from nuclear escalation. Military planners have offered many forms of an area defense, adapted for specific use in their own countries and with their own military systems. One that has been suggested for the Federal Republic of Germany is based on an area network consisting of 5,000 platoon-size commando units, and a phased reaction procedure.

Phase one would consist of stationing NATO armored brigades along the border on continuous alert to prevent a surprise attack and gain



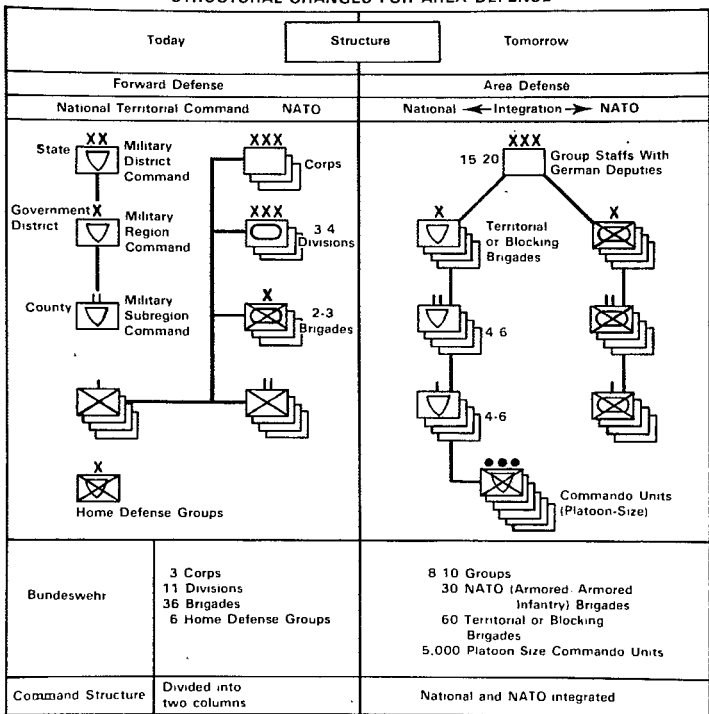
Area Defense

time for activating and mobilizing the underlying network and airlifting overseas reserves.

The second phase of defensive operations would be handled by the platoon-size commando units in the net along with the armored brigades.

In the third phase, the larger combat ready reserves of the network, supported by allied strategic reserves,

STRUCTURAL CHANGES FOR AREA DEFENSE



would regain any lost territory.

This new defensive network concept also would consist of static and mobile elements. Obviously, a change in the present NATO structuring would be required. The static net of the area defense would be formed by the commando units placed in depth to 200 kilometers. One-third of these units would consist of regular soldiers stationed along the border. The remaining two-thirds would consist of small active cadres and reservists. NATO's mobile and ar-

mored brigades could be incorporated into the new area defense network without a great deal of restructuring. The division level, however, would be eliminated since brigades would take over the division role.

This new area defense by net could regain NATO's deterrent credibility by doubling conventional combat power and raising the nuclear threshold, thus giving new impetus to the détente and nonproliferation strategy of the West and new hope to an unprotected population in a crisis.

OTHERS IN REVIEW

Tank Combat—Antitank Defense *Kampftruppen*, July-August 1977 (West Germany)

Most of the articles in this issue concentrate on some aspect of combat involving tanks. Subjects range from fighting with tanks, fighting against tanks, tank versus tank, tanks fighting in motion, proposals for pocket maps for tank commanders, first through third-generation antitank missiles, *MILAN*, the long tank-destroying arm of the brigade commander and possibilities for antitank defense for all troops. Other articles cover participation by the artillery in combating armored forces, cannon-launched guided projectiles for antitank combat and thoughts on future equipment for armored reconnaissance troops.

Allied Military Reinforcements to Norway

By Maj Gullow Gjeseth

Translated and condensed by

Hj I Sunde

Internasjonal Politikk

September 1977 (Norway)

Under no circumstances can Norway alone counter the Soviet forces on the northern flank of NATO. Allied reinforcement in case of war, or if the country comes under threat of war, is a main factor in Norwegian military strategy.

A special NATO force, the Allied Mobile Force (AMF), has existed nearly 15 years, tasked to reinforce the flank areas of NATO. The force consists of a multinational brigade group and seven tactical air squadrons. This force will show an enemy the NATO resolution and—in case of war—the will of the NATO

countries to reinforce the threatened area with other conventional or nuclear forces. These other forces must come primarily from the NATO strategic reserves.

NATO's strategic reserves are stationed in the United Kingdom (UK) and North America. The UK reserves, however, are being greatly reduced due to defense cuts. The land component of these reserves will soon consist of one light brigade and a Royal Marine brigade group.

The United States and Canada are the main contributors to the NATO strategic reserve. In connection with reinforcements to Norway, a Canadian combat group stationed in Canada is earmarked for NATO. This force should be well-prepared for operations in a northern area like Norway. No American forces are earmarked for Norway. However, army as well as tactical air and marine corps forces might be deployed. Due to the space/time factor, tactical air and marine corps forces would be of primary interest. For Norway, the question of reinforcements is a critical one. Because of the superior USSR forces at the northern flank, Norwegian forces alone will not be able to defend this area for a lengthy time. Reinforcements must be transferred to Norway before Norwegian forces are overrun. The main problem, therefore, becomes one of providing transportation and security for the force in the face of USSR naval and air forces. The United States has the only military organization in NATO with a real capacity for strategic movements, the Military Airlift Command.

Another important part of the US strategic transportation system is the amphibious fleet with about 60 ships of various sizes.

The USSR Northern Fleet and air

forces in the Kôla area pose a threat to the reinforcement transports. However, if the USSR wants a limited conflict, it has good political reasons not to use the full force of the Northern Fleet. On the other side, the task of bringing allied troops safely ashore in Norway is probably the biggest problem facing NATO in such a war.

One solution would be to pre-stock allied heavy equipment in Norway. By doing so during peacetime, transport volume would be reduced and timely reinforcement effected during an emergency.

Concept of Employment of Artillery in the 1980s

By Lt Col D W L. Robinson,
British Army

The Journal of the Royal Artillery,
September 1977 (Great Britain)

What kind of support must the artillery be prepared to give in land operations of the 1980s? The classic role of the artillery has been the destruction of enemy formations and direct-fire weapons. However, with an enemy whose tactical doctrine relies heavily on the sheer weight of its own artillery to perform the same function and who has a numerical superiority of 6 to 1, a re-evaluation of our concept of artillery employment is badly needed.

Primarily, according to Robinson, we must ensure that the enemy artillery is engaged in depth, relegating, if necessary, close support to a secondary mission. The achievement of this additional depth capability is heavily dependent upon the improvement of target acquisition means and a continuance of Western technological supremacy in this area.

The author eventually reneges on his original position by saying that there can be no preordained commitment to either the attrition or contact battle and that artillery response depends upon the tactical situation.

His initial argument, however, leaves no doubt that he considers counterbombardment the prime task for artillery in any future war with the Soviets.

Land Superiority From Air— A New Role for Attack Helicopters

By Lt Col Mohammad Arshad
Chaudry

Pakistan Army Journal, March 1977
(Pakistan)

Lieutenant Colonel Chaudry takes as his thesis the idea that "the attack helicopter can be as revolutionary to maneuver elements as the tank when it was first introduced in the Army" and expands his thought in a well-reasoned article dealing with possible tactics and techniques for the employment of the attack helicopter on the mid-intensity battlefield. He addresses a number of cogent questions, among them possible changes in tactics rising from a solid doctrine of coordinated helicopter/tank operations and the projected comparative importance of tanks and helicopters on the modern battlefield. Ultimately, he envisions a modified blitzkrieg doctrine emerging. His conclusion that the tank of today faces gradual extinction as a result of advanced antitank weapons is, however, a trifle overdone. The infantryman, after all, has been extremely killable for thousands of years, and he has not disappeared from the arena of war. Mere killability does not make for extinction.

UNITED STATES

UTTAS NAMED "BLACK HAWK"

The Army's Utility Tactical Transport Aircraft System (UTTAS) has been renamed *Black Hawk* in honor of the famous Sac Indian chief from Illinois.



Sikorsky Aircraft is building 14 production model *Black Hawks*. A fleet of more than 1,000 is planned. The aircraft is designed to carry 11 fully equipped combat troops and a crew of three. It is powered by two T700, 1,500-horsepower engines.

The Army, which commonly names aircraft after Indians, renamed the UTTAS in 7 September ceremonies at Fort Myer, Va.

The *MILITARY REVIEW* and the US Army Command and General Staff College assume no responsibility for accuracy of information contained in the MILITARY NOTES section of this publication. Items are printed as a service to the readers. No official endorsement of the views, opinions or factual statements is intended. Editor

NEW MARINE CORPS RADIO

The US Marine Corps' single-sideband backpack *AN/PRC104*, nucleus of a new family of high-frequency radio sets, is being produced for the field after successfully completing extensive environmental, laboratory and field tests.

Several thousand radios in varying configurations are being

pounds (6.4 kilograms), including battery

This newest generation radio set is virtually automatic. The operator simply turns on the power, selects a frequency and hits the press-to-talk switch. The antenna is tuned, and the transmitter comes up to full power automatically. These electronically performed actions are



built by Hughes Aircraft under terms of a \$22-million contract from the US Naval Electronic Systems Command

The Army is conducting separate tests of the equipment as a possible replacement for its larger and heavier *AN/PRC74*, previously developed by Hughes

The new *PRC104* is about a third the size of the *AN/PRC74* and weighs less than half as much. It is 12½ inches wide, 10½ inches high and 2½ inches thick (31.75 x 26.67 x 6.665 centimeters). It weighs 14

almost noiseless, an advantage for patrols operating near or behind enemy lines

The *PRC104*'s 280,000 channels range from 2 to 29,999 megahertz in 100 hertz steps. It has a 20-watt power output, compared with the *PRC74*'s 16,000 channels from 2 to 18 megahertz in kilohertz steps and 15-watt power output. The 100 hertz increments and dual sideband selector make the set compatible with the frequency allocations of any high-frequency single-sideband transmitter worldwide

MUST POWER PACK



The *M*A*S*H* army field hospital of movie and television fame was replaced by MUST, better known as medical unit self-contained transportable

The heart of this mobile medical facility is an aluminum-housed self-contained power unit which can deliver all of the electrical, air-conditioning and hot and cold water requirements to support the hospital's needs. The power unit also is designed to provide compressed air and suction capabilities and uses exhaust heat energy to provide space and water heating.

This versatile unit, known as a MUST U-PACK gas turbine power system, is produced by Amertech

Corporation and fabricated with Kaiser aluminum.

Flexible ducts connect the medical and housing facilities to the U-PACK which provide a controlled environment for hospital cleanliness and personnel comfort essential in treating battlefield casualties.

The unit can generate 90 kilowatts of 400-cycle and 10 kilowatts of 60-cycle electrical power, 20 tons of refrigeration and 825,000 BTUs of heated air per hour, even when outside temperatures drop to minus 65 degrees Fahrenheit.

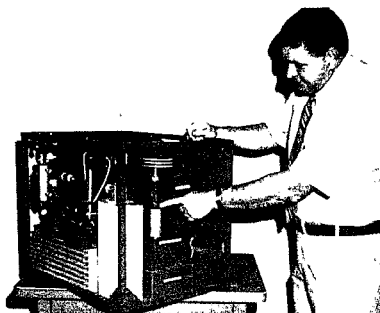
The power pack is shown in the bottom right of the photo.

SILENT 1.5-KILOWATT GENERATOR

The US Army Mobility Equipment Research and Development Command has announced the development of a silent-running 1.5-kilowatt generator.

In the photograph, the inventor of the generator, Stanley Kurpit, points to the heart of the system, the methanol air fuel cell.

The new power plant is expected to weigh about 150 pounds. It will replace the 1.5-kilowatt gasoline-engine-driven generator set currently in the field and can be used as both a general purpose ground power source and an on-board vehicle auxiliary power unit providing silent tactical power for general housekeeping, missile



The cell consists of a methanol steam reformer which converts methanol into a hydrogen-rich gas, a fuel cell stack which converts the hydrogen gas to direct electric current and a voltage regulator and/or inverter which converts the electrical energy to alternating current at 60 or 400 hertz.

Methanol reforming is now the leading method for meeting the Army's requirement for silent forward-area power plants that are nonpolluters, generate minimal heat for enemy detection and have high life expectancy and mechanical reliance.

support, communications and electronics.

Methanol fuel cells represent the only technical approach that currently meets the standards set in the approved requirements for operational capability documents for the Army's Silent Lightweight Electric Energy Plants (SLEEP) program.

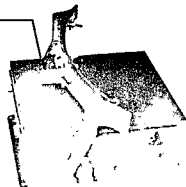
The fuel cell is currently in advanced development and is scheduled to enter engineering development in Fiscal Year (FY) 1979. It should be type-classified in mid-FY 1982 and fielded in late FY 1984.

FULLY AUTOMATED SCORING TARGET (FAST) SYSTEM

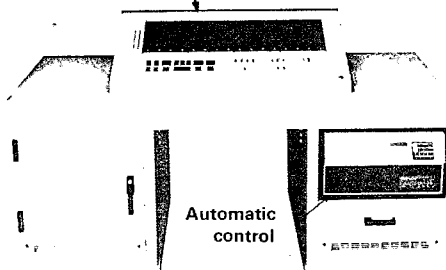
ABA . Electromechanical Systems, Inc., has introduced to the general military market an automatic scoring system for

FAST features a computer program central control console and automatic scoring to include a paper print-out of individual scores. The

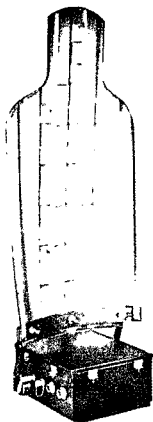
H-10 hit sensor



Display/control



CC-10 control console



TM-10 target mechanism

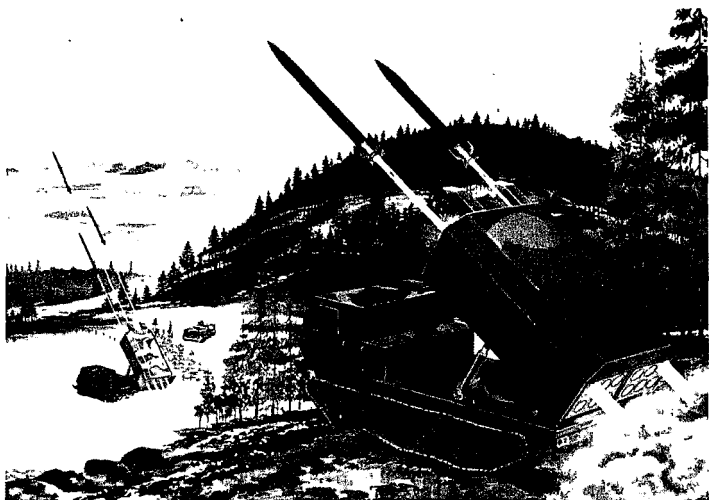
marksmanship training and rifle qualifications. This system uses solid-state electronics and "off-the-shelf" technology for dependability and low cost.

The system emphasizes versatility in that interchangeable components can convert FAST from a fixed to a portable mode, or from laser simulation to live fire. FAST also may be converted to score tank fire.

central control requires only one operator.

The *TM10* target mechanism accepts standard E and F military targets. Unique to this target is the hit sensor which can discriminate between wind buffeting, near misses, muzzle blast and debris. The sensor will indicate up to 2,400 rounds per minute and has a useful lifetime of one million cycles.

ROCKET COMPETITORS SELECTED



The Army has selected two industry teams to compete for the production program of the General Support Rocket System (GSRS) (*MR*, Jul 1977, p 93). The Boeing Aerospace Company and the Vought Corporation will competitively design, build, test and evaluate the GSRS system. Boeing received approximately \$34 million and Vought \$30 million for the project.

The GSRS will be a highly mobile, surface-to-surface free-flight rocket system intended to complement cannon artillery during

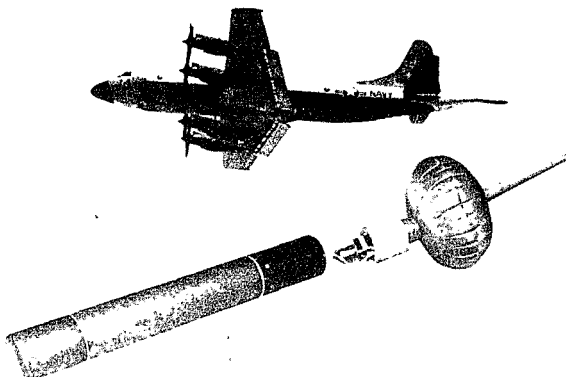
"no warning" and intense combat situations.

The system is designed to deliver fire in a concentrated area. Principal targets would be troops and light equipment, air defense sites and command posts.

The US Army Missile Research and Development Command has established a 29-month validation program to obtain the most effective weapon for the lowest cost. The program will include a competitive shoot-off between the two contractors at an Army missile test range prior to a production decision.

NAVY SONOBUOYS

Work has started on a pilot production program for US Navy sonobuoys at Raytheon Company's Submarine Signal Division, Portsmouth, R I Raytheon was one of two companies to receive first production awards for the AN/SSQ62 Directional Command Active Sonobuoy System (DICASS)



The company, participated in development and evaluation of the sophisticated DICASS sonobuoy during the past three years under contracts with the US Naval Air Development Command

Capable of being ejected from aircraft patrolling an ocean area, the sonobuoys are, in effect, miniature sonar systems that echo range on submarines and transmit the data by radio to the airborne operator

The initial production contract is valued at \$5 million

JAPAN

ANTISUBMARINE AIRCRAFT

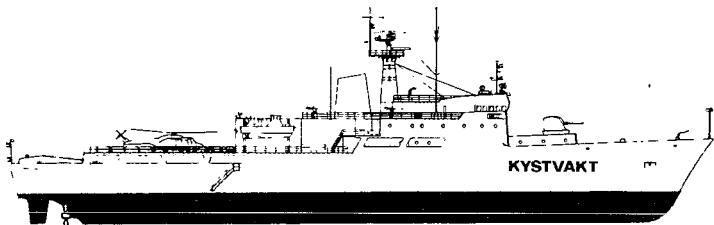
The Japanese Defense Agency has announced that it will procure 45 Lockheed *P3C Orion* antisubmarine warfare aircraft from the US manufacturer. Total value of the contract is \$1.31 billion or \$29 million per plane.

Ten of the *Orions* with their

highly sophisticated electronic gear will be delivered to Japan this year, with remaining deliveries stretching to 1988. The *P-XL* project for a Japanese (Kawasaki)-designed antisubmarine warfare aircraft is, therefore, certain to be shelved.

NORWAY

NEW PATROL BOATS

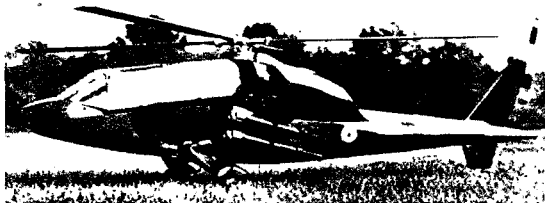


The recent introduction of the 200-nautical-mile economic sea zone has required the expansion and modernization of the existing six-ship fleet of the Norwegian *Kystvakt* (coast guard).

The navy, of which the coast guard is part, has decided to acquire seven new patrol boats, with construction expected to begin in 1979. The boats will be designed following the lines of the sketch shown, and will displace 1,945 tons. The new boats will carry a 76-man crew, naval gun and advanced communications equipment. They have a top speed of 23 knots.

ITALY

ARMED HELICOPTER



The Augusta Group of Italy currently is developing a new, armed helicopter for the Italian Army. This is the A129 *Mangusta* antitank helicopter, a derivative of the *Hirundo*. The first prototype is scheduled to fly before the end of 1979. The aircraft will be powered by two Lycoming LTS101 turbine engines or two Allison 250-C30.—*Interavia*, © 1977

USSR

THREE NEW COMBAT AIRCRAFT TESTED

According to unofficial sources, the Soviet Union is carrying out flight development trials with prototypes of three new combat aircraft—a fighter, a close air support plane and a long-range bomber.

The new fighter is thought to be a Mikoyan product bearing the designation of *MIG29*. It is considered primarily as the Soviet answer to the US *F15*, *F16* and *F18* aircraft. It is believed to have an intercept capability against low-flying strike aircraft such as the *F111*, *Tornado* multirole combat aircraft and the recently canceled *B1* bomber. Series production versions of the *MIG29* can be expected to become operational with frontal aviation units in the early 1980s.

The new close air support air-

craft being flight-tested in the Soviet Union is thought to be the Russian equivalent to the US Air Force Fairchild *A10 Tankbuster*. It is not known yet whether or not it is built around a large caliber *Gatling* gun as is the *A10*. A relatively slow, armored, low-flying jet aircraft, it is said to have a large capacity for external stores, including both bombs and the newly developed AS missiles.

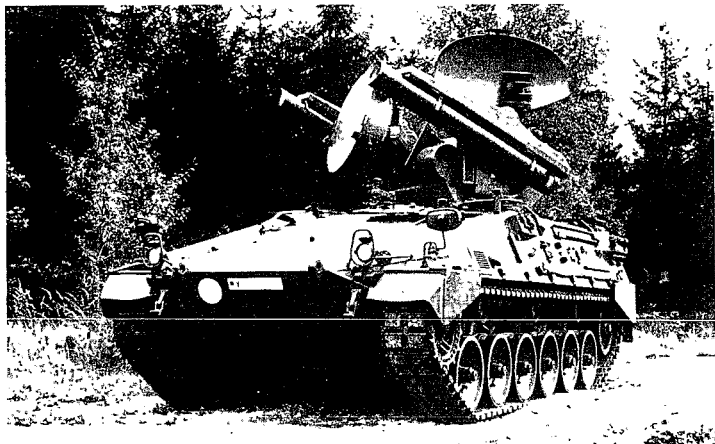
The third new prototype observed is a supersonic bomber version of the *Tu-144 Concordski*. It is reported to have a double delta wing like the *Tu-144* but, unlike the latter, to be fitted with fixed canard surfaces. It has about the same size and takeoff weight as the *Backfire*.—*International Defense Review*, © 1977.

EUROPE**ROLAND WEAPON SYSTEM REACHES PRODUCTION STAGE**

Following conclusion of the industrialization phase, the first armored personnel carrier-mounted all-weather launch system for the German-French *Roland* low-level anti-aircraft weapon system was delivered by the industry in early October 1977.

The delivery of the first all-weather launch equipment marks the final development step toward

In Germany, *Roland* is to begin replacing the 40mm *L70* anti-aircraft gun at corps level in 1979. Starting in 1983, *Roland* is to go into service with the air force and the navy for the protection of military installations, in particular against low-level air attacks in fair weather. Plans call for 140 units for the army and a similar number for the air force and navy combined.



the reproducibility of the system and all its components. A launch system had been undergoing company tests for 18 months, and, in France, a preproduction fine-weather vehicle on an *AMX* chassis was delivered at the beginning of the year.

The *Roland* low-level anti-aircraft weapon system was chosen for the US Army in January 1975. The system is to be produced in the United States by Hughes Aircraft Corporation and the Boeing Company.



Under Study

Tactical Operations System (TOS). The first step in winning the battle is seeing the battlefield. The more clearly the commander can see what is happening, the more certain he can be of his ability to concentrate forces at the right place and time. His decisions are based on accurate, timely information on the status, deployment and capabilities of both friendly and enemy forces. For the 1980-90 battlefield, highly sophisticated intelligence and combat systems are being developed and fielded which will obtain the information needed by commanders and staffs. But the large volumes of information processed by the highly developed systems will saturate traditional command and control systems and organizations. Information will be available in greater quantity than can be processed manually, making automated assistance desirable in facilitating the command and control function. TOS is a computer-assisted command and control system which will enable commanders and their staffs to integrate and employ more effectively the battlefield systems which fight, support and sustain the battle. Utilizing standard militarized components capable of operating in a ground combat environment, TOS will constitute an on-line, near-real-time, secure automatic data processing system.

TOS was conceived initially in 1956. Since then, it has gone through the disciplined procurement procedures of concept formulation and validation prior to beginning engineering development. These activities included accomplishment of comprehensive system studies and testing. A major field test was conducted in July 1977 to validate the divisional TOS concept. Designated FM 222, the testing concluded that the technical approach taken since program initiation was valid and that TOS could provide significant assistance to the commander in a combat environment.

Corps and divisional TOS are being developed concurrently. The division system is now in its advanced development stage, entering engineer design prototype in the material development/acquisition cycle. The current fielding program for the division TOS calls for a three-phase deployment, the first being placed at Fort Hood in the Fiscal Year (FY) 1979 time frame. Phase II will locate in Europe during FY 1981-82, and phase III will place the complete *Mark I* TOS in Europe about FY 1983. Equipment fielded in the first two phases will not consist of all elements of the original TRADOC-approved required operational capability (ROC). As new hardware and software are introduced and tested, user feedback will be evaluated, analyzed and, if approved, incorporated into TOS accordingly. Major contractors for hardware and associated software are Singer Corporation, Litton Industries and Auerbach Associates, Inc.

Items in this department are summaries of studies underway or planned in the Army community. While every effort is made to ensure accuracy, publication lead time may result in differences between the summaries and the actual study program.—Editor

AN ANALYSIS OF TWO WARS

By the editors of *Military Affairs*

MILITARY ANALYSIS OF THE CIVIL WAR: An Anthology by the Editors of *Military Affairs*
Introduction by T. Harry Williams 414 Pages, Kraus-Thomson Organization, Millwood, N. Y. 1977 \$15.00

The editors of *Military Affairs* have succeeded in publishing two military anthologies worthy of being on the bookshelves of scholars, buffs and those who simply enjoy reading articles put together by knowledgeable writers.

One can hardly err in reading a book containing works by acknowledged luminaries of military history such as Frank F. Vandiver, E. J. Stackpole, Armin Rappaport, Bruce Catton, Theodore Ropp and T. Harry Williams, to name a few.

The Civil War anthology was not intended to be a detailed analysis of the conflict, and, as a consequence, a student of the Civil War may be somewhat disappointed in not finding a complete consideration of that "irrepressible conflict." However, if the reader bears in mind that the book is a collection of articles previously printed by the *Military Affairs* magazine, the scope of the subject matter will vindicate the shortcomings. In order to read some of the stimulating subject matter in the anthology, one would be obliged to acquire back issues of the magazine, a chore that the average reader usually is reluctant to tackle.

Some of the works are specialized studies that are not handled in depth elsewhere. Among these are the Battles of Donelson,

Cedar Creek, Pea Ridge and The Crater in Petersburg, Virginia.

Included are articles that may spark a reader to explore further in an attempt to gain a more complete understanding. As an example, T. Harry Williams' treatment of the "Old Pathfinder," John C. Fremont, leads one to question the veracity of the "political appointees" on both sides. Frank F. Vandiver shows clearly in his study of General John B. Hood that an evaluation of all military leaders of this era must go beyond their ability to fight.

The editors divided the anthology into four groupings: command and administration; logistics; infantry and artillery; and the final campaigns. Each article is aptly placed to provide a logical sequence of subject matter.

In *Military Analysis of the Revolutionary War*, Higginbotham concludes his introduction with;

As for Americans, they did not win the war; but more importantly, nor did they lose it. The Americans had the greater tenacity or staying power, the greater incentive. As a result, they won their independence if not the war, and that was victory enough.

In the articles that follow, several authors add credence to his analysis of the military consequences of the Revolutionary War. This is not to imply that the famous battles were examined. This anthology is just the opposite; not one of the more popular accounts is studied.

In each of four sections, careful selections described how a "minor league" cast of characters, short of every resource needed to fight a war save courage, battled in the "major league" and fulfilled their goal.

An understanding of the imperatives that guided the militia (an often maligned but significant force in American history) sets the stage in the first part of the anthology. The editors wisely included Maurer Mauerer's work "Military Justice Under General Washington."

MILITARY ANALYSIS OF THE REVOLUTIONARY WAR. An Anthology by the Editors of *Military Affairs* Introduction by Dr. Don Higginbotham .246 Pages Kraus Thomson Organization, Millwood, N Y 1977 \$12.50

In a few short paragraphs, one grasps the need of a system in the Army designed to control independent, cocky and often unruly men, threatening to lose all by degenerating into mobs. The wisdom with which military justice was initiated is easily recognized by anyone familiar with the present system as many of the same precepts have survived the test of time.

Two fine articles in the second section describe the beginning of our Army medical system and the pros and cons of formal weapons tactics (used by British and Continentals) and guerrilla warfare (mastered by Americans and used occasionally but with effect by the British). Also, Allen French explores the ill-fated British attempt to capture military supplies at Concord, James A. Huston studies logistics problems encountered by Benedict Arnold during his trek to Quebec and Hugh Jameson looks at equipment used by the militia of the Middle States. Other equally impressive articles sustain the reader's interest.

It is always interesting to read the accounts of foreign visitors, though romanticized, and this is what makes up the third part. An unpublished account of a French traveler to America, translated by Durand Echeverria and Orville T. Murphy explains the American success and the essence of this anthology, "American military tactics are the product partly of the people's way of life, partly of their military traditions, and partly of the inexperience in this cruel art."

"Penobscot Assault—1779" written by Henry I. Shaw Jr. concludes this fine anthology. Exactly why this American disaster was chosen as the last article is not entirely clear. Perhaps the editors had a message: A pickup team made up of men with the best of intentions cannot defeat a determined foe.

Lt Col Moorad Mooradian,
Department of Resource Management, USACGSC

TOP SECRET: National Security and the Right to Know by Morton H. Halperin and Daniel N. Hoffman 158 Pages New Republic Books, Washington, D C 1977 \$8.95 clothbound \$3.95 paper bound

Where lies the elusive boundary between the public's right to know and the government's right, if not obligation, to withhold information in the name of national security? This issue, irrelevant in a totalitarian state, is one of great and growing concern to democratic nations committed, at least in principle, to open government and a well-informed, responsible citizenry. In *Top Secret*, the authors critically examine the response of the United States to this dilemma and find the established classification machinery, as well as the philosophy underlying it, in need of major repair.

To end what they describe as a "chaotic and unprincipled" system of information control, the authors propose a new classification procedure, established by legislative rather than executive order, and based on the principle that much information currently classified can, without jeopardizing national security or foreign affairs, be released into the public sector to add a needed dimension to discussions over vital national issues. Only that material which could contribute nothing to the public debate, or would clearly benefit real and potential adversaries, would be withheld. All other information would be marked for routine release or discretionary determination. Significantly, all data concerning American forces in combat or likely to be so, American forces stationed abroad and the nontechnical aspects of the intelligence community, to name but a few, would be routinely released.

In the discretionary category, officials, under the scrutinizing eye of an independent, Congressionally established Classification Review Board, will be obliged to balance the value of disclosure against a realistic assessment of the possible harm to national interests.

Such reform, hold Halperin and Hoffman, will end "unrestrained official discretion" and substitute a rational policy of mandatory

disclosure of heretofore restricted information the public "urgently requires."

This is a well-argued, balanced and coherent study of a vital contemporary issue. It is not a definitive treatment of governmental secrecy, but a focused, meticulously structured and convincingly documented description of the growing enforced estrangement between the public and the vital issues of national and international policy in which they have a legitimate voice. By deftly setting an old question into the context of recent history, the authors have lent it both relevance and urgency. Readers will find it difficult to disagree with their conclusion that the mounting tension between the public's right to informed participation in policy debate, and official reluctance to divulge information essential to meaningful exchange, cannot go long unattended.

Lt Col Patrick H. Gorman,

Associate Professor of Military Science, University of Colorado

DER SOWJETRUSSISCHE PARTISANENKRIEG 1941-1944 IM SPIEGEL DEUTSCHER KAMPFANWEISUNGEN UND BEFEHLE by Erich Hesse 292 Pages Musterschmidt-Verlag, Frankfurt, FRG 1969 DM 65

In the series of studies and documents for the history of World War II issued by the *Arbeitskreis für Wehrforschung* (a military research group), two volumes warrant attention. Volume Number 9 is the research on the Soviet partisan war between 1941 and 1944 seen in the light of German combat directives and orders. The other, Volume Number 13, is titled *The End on the Balkan, 1944/45: The Military Evacuation of Yugoslavia by the German Wehrmacht*. Although treating two different fronts of the "Great War," they have a number of points in common.

On each of the above subjects, a goodly number of previous publications have been issued. Individual or general accounts have been either single events or one-sided accounts and rarely left a "good hair" on the opponent. This is particularly true for publications coming out of the Eastern countries. Even official works make no exception. One glance

DAS ENDE AUF DEM BALKAN, 1944/45. Die militärische Räumung Jugoslawiens durch die deutsche Wehrmacht by Karl Hynicka 404 Pages Musterschmidt Verlag, Frankfurt, FRG 1977 DM 90

at any chapter of the six volumes *History of the Great Fatherland War* will prove my point. For instance, it is never mentioned that nearly one million Soviet citizens were active supporters of Germany at the time. These books do not follow such a pattern of partiality.

The model of modern large-scale partisan war came out of China and reached its climax during World War II in the Soviet Union. Here is the classic example of how this "War of the Dark" was fought and how important it was to win the support of the people. The erroneous belief that partisan war is the result of a general and spontaneous rising of the people as "historical lawfulness" is verified unquestionably by both books.

Volume Number 13 gives a fine review of the political developments in Yugoslavia between 1918 and 1941 leading to the campaigns and the military resistant movements in the area. In September 1944, the *Wehrmacht* started to retreat before the attacking Russian armies. The ensuing battles are individually described up to 15 May 1945, a week after the war officially ended. After V-E Day, 80,000 German soldiers lost their lives at the hands of the Balkan partisans alone.

With meticulous accuracy, the author has assembled, compiled and evaluated the facts from literature, official documents and interviews with civilians and soldiers of every nation involved in the events. The actual account of events takes 127 pages; annexes with documents, organizational charts, maps, bibliographic listing of sources and registers.

The documentary, however, is by no means a dry statistical account, but contains interesting and often tragic accounts taken during personal interviews by the author.

Both books are vivid reports of important aspects of World War II. With their impartiality, they are in the best tradition of military history written in Germany.

Col Wolfgang Gerhardt, FRG Army,
Headquarters, LANDJUT

JANE'S FIGHTING SHIPS,
1977-78. Edited by Captain
John Moore, RN 829 Pages
Franklin Watts, N Y 1977
\$72.50

The new edition of *Jane's Fighting Ships* is out. The introduction by the Prince of Wales is an excellent statement of the service which *Jane's* provides in the wardroom and on the bridge of most navy ships. This book is probably selected as the manual for ship information and identification at a ratio of about 20 to 1 over official intelligence publications. This year's volume continues an 80-year tradition of a readily usable format and amazing detail for so ambitious an undertaking.

Captain Moore's plea for objectivity contained in the foreword is not likely to be honored. He will receive his "Imperialist Lackey" award again this year for an astute summary of naval trends. *Seapower* magazine has already republished it. He correctly labels tonnage and number comparisons of US and USSR fleets as grossly misleading, then goes on to speak of training and quality of personnel. I would have preferred a mission comparison. Training and technological expertise can go only so far in mitigating a lack of forces. The gut questions are these:

- How many and what type of ship does the increasingly import-dependent West need to achieve a degree of sea control which guarantees vital resource flow, the reinforcement and resupply of overseas forces and allies in the event of war and defense of our territory?
- How many and what type of ship does the nonimport-dependent USSR need to disrupt that flow; reinforcement and defense while defending its own territory?
- Are the requisite ships extant on either side?

The answers are not encouraging. The 1977-78 *Jane's* shows 322 active Soviet submarines with 100 more in reserve.

CDR Edward F Kellogg, USN,
Navy Section, USACGSC

NEW BOOKS RECEIVED

This listing is published to bring new professional books to the attention of readers. Review copies have already been sent to reviewers.

Books are not offered for sale through the *Military Review*.

THE MIDDLE EAST, U.S. Policy, Israel, Oil and the Arabs. Edited by Mark A. Bruzonsky 196 Pages. Congressional Quarterly, Washington, D. C. 1977 \$5.25

A STATE OF BLOOD. The Inside Story of Idi Amin by Henry Kyemba 288 Pages Ace Books, N. Y. 1977 \$2.50

STEP-BY-STEP KNIFEMAKING: You Can Do It! by David Boye 270 Pages Rodale Press, Emmaus, Pa. 1977 \$10.95 clothbound \$6.95 paperbound

THE SHAMROCK AND THE SWASTIKA: German Espionage in Ireland in World War II by Carolle J. Carter 287 Pages Pacific Books, Palo Alto, Calif. 1977 \$12.95

THE SOVIET AIR FORCE. Since 1918 by Alexander Boyd 259 Pages Stein & Day, Braircliff Manor, N. Y. 1977 \$10.00

SOLDIER IN PARADISE: The Autobiography of Captain John Smith. by Burton Wohl 345 Pages G. P. Putnam's Sons, N. Y. 1977 \$9.95

THE SOUTHEASTERN INDIANS by Charles Hudson 573 Pages University of Tennessee Press, Knoxville, Tenn. 1976 \$23.50

ARMS CONTROL AND DISARMAMENT AGREEMENTS: Texts and History of Negotiations. 187 Pages US Arms Control and Disarmament Agency, Washington, D. C. 1977

GUNBOAT DIPLOMACY Great Power Pressure in Venezuela, 1895-1905 by Miriam Hoöb 202 Pages A. S. Barnes & Co., Cranbury, N. J. 1977 \$8.95

GERMAN ARMY HANDBOOK APRIL 1918. Introduction by David Nash 186 Pages Hippocrene Books, N. Y. 1977 \$12.50

A GENIUS FOR WAR: The German Army and General Staff, 1807-1945 by Colonel T. N. Dupuy 362 Pages Prentice Hall, Englewood Cliffs, N. J. 1977 \$14.95

THE SAILOR'S WIFE. 3rd Edition by Jean Ebbert 186 Pages Naval Institute Press, Annapolis, Md. 1977 \$5.95

THE SOVIET MILITARY BUILDUP AND U.S. DEFENSE SPENDING by Barry M. Blechman, Robert P. Berman, Martain Binkin, Stuart E. Johnson, Robert G. Weinland and Frederick W. Young 61 Pages Brookings Institution, Washington, D. C. 1977 \$2.95

SATURDAY NIGHT LIVE. Edited by Anne Beatts and John Head 124 Pages Avon Books, N. Y. 1977 \$6.95

THE ANATOMY OF A SMALL WAR: The Soviet-Japanese Struggle for Changkufeng/Khasan, 1938 by Alvin D. Coos Foreword by Edwin O. Reischauer 409 Pages Greenwood Press, Westport, Conn. 1977. \$25.00

ALL QUIET ON THE EASTERN FRONT: The Death of Vietnam. Edited by Anthony T. Bouscaren 161 Pages Devin-Adair, Old Greenwich, Conn. 1977. \$5.95

HISTORY OF THE MODERN WORLD: The Forties and Fifties by Nathaniel Harris 64 Pages Macdonald/Two Continents, N. Y. 1977 \$3.95

HISTORY OF THE MODERN WORLD: The Sixties by Nathaniel Harris 64 Pages Macdonald/Two Continents, N. Y. 1977 \$3.95

THE HASHEMITE KINGDOM OF JORDAN AND THE WEST BANK: A Handbook Edited by Anne Sinai and Allen Pollack 371 Pages American Academic Association for Peace in the Middle East, N. Y. 1977 \$6.95

GERMAN RAIDERS OF WORLD WAR II by August Karl Muggenthaler 308 Pages Prentice-Hall, Englewood Cliffs, N. J. 1977 \$14.95

GAME BIRD HUNTING by Philip Rice and John I. Dahl 190 Pages Funk & Wagnalls, N. Y. 1977 \$7.95 clothbound \$4.95 paperback

RUSSIA BESIEGED by Nicholas Bethell and the Editors of Time-Life Books 208 Pages Time-Life Books, Alexandria, Va. 1977 \$9.95